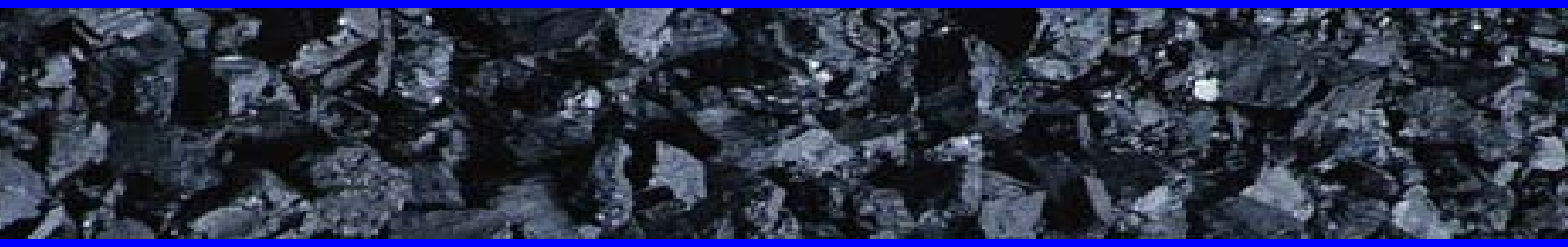

FINAL TECHNICAL REPORT

Improved Energy Efficiency and Economic Recovery of Eastern Kentucky Coal Using a Novel Dry Clean Coal Technology

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Submitted to:

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EXECUTIVE SUMMARY

The FGX Compound Dry Coal Cleaning Separator was evaluated for the treatment of three coal sources at TECO Energy's Clintwood-Elkhorn operation during the week of July 9th through 13th, 2007. A second round of tests was conducted at the same TECO operation during August 28th through 31th, 2007, to verify the results from the first round. The unit was then moved to James River Coal Company's LEECO operation near Hazard, Kentucky where tests were conducted on a highwall miner coal, a surface mine coal, and three underground mine coals during the week of October 29th through November 2nd, 2007. The separator is a dry coal cleaning technology that utilizes autogenous fluidized bed and table concentration principles. A 5 metric tons per hour (tph) mobile unit was utilized in the test program. The objective for most of the test programs was to maximize the amount of rock rejected by the unit while ensuring nearly 100% recovery of coal. When utilized at applicable operations, the rock rejection would significantly reduce transportation costs, increase the wet-cleaning plant capacity, and reduce environmental impacts of reject storage.

Raw coals from three separate sources were treated at the TECO operation during the Round 1 Tests. The Round 2 Tests included the additional test work on one of the raw coals evaluated earlier plus 2 additional high ash feeds from old coarse reject areas. The tests found that 25% to 38% of the total feed could be rejected at the mine site using the dry coal cleaning technology and the reject would contain greater than 87% ash, which indicates nearly pure rock. Two of the coal sources currently haul the raw coal more than 15 miles to the preparation plant and thus the removal of 38% rock before haulage represents a significant improvement in efficiency and operational costs. Likewise, the experiments performed on the James River raw coals found that nearly 20% of the raw coal feed could be rejected at the mine site using the dry cleaning technology. An additional benefit at the James River operation was the unit produced a clean coal product containing about 20% ash which meets specifications for targeted steam markets. As such, strong interest exists for the dry cleaner to serve as a producer of marketable coal while rejecting a large amount of nearly pure rock.

TECO TEST PROGRAM RESULTS SUMMARY – ROUND 1

The primary objective for the test programs at the TECO operation was to evaluate the performance of the FGX dry coal cleaning technology to reject high ash material from the run-of-mine (ROM) raw coal transported by truck to the preparation plant. Thus the following summary presents the potential for rejecting the high ash material at the mine site which will reduce transportation and processing costs.

Falcon Coal

1. A total of 12 tests were performed on the Falcon raw coal under varying operating conditions including experiments with screened and unscreened feed. A vibrating screen with ¼ inch aperture was used for prescreening purposes.

2. The separation performance results achieved on the prescreened coal over a range of operating parameter values were relatively consistent.

3. Based on the performance results, approximately 43.3% of the material can be rejected by applying the FGX technology and the rejected material will have an ash content of near 91%. The results also indicated that as much as 57.5% of the total +¼ inch Falcon raw coal can be rejected with an ash content of 89% for the rejected material.

4. The performance results achieved on the unscreened ROM raw coal was similar to those achieved on the prescreened material. The findings indicate that 37.9% of the total feed can be rejected with an ash content of 90.5% for the rejected material.

Snapco Coal

1. A total of 5 tests were performed on the Snapco raw coal, a high ash feed (>60%), under varying operating conditions including experiments with screened and unscreened feed. A vibrating screen with ¼ inch aperture was used for prescreening purposes.

2. The separation performance results for the high ash feed indicated that the FGX technology can be used to reject about 25% of the total raw feed while producing a reject containing about 87% ash.

3. Similar results were achieved on the unscreened raw feed. The findings indicate that about 27% of the total Snapco ROM coal can be rejected with an ash content of about 87% for the rejected material.

Elkhorn No. 2 Coal

1. A total of 11 tests were performed on the Elkhorn No. 2 raw coal under varying operating conditions with prescreened feed only. A vibrating screen with ¼ inch aperture was used for prescreening purposes.

2. The operating conditions providing the best ash rejection performance for the Elkhorn No. 2 coal was slightly different than that of the other two coals.

3. The separation performance results indicated that approximately 36% of the nominal +¼ inch Elkhorn No. 2 raw feed can be rejected with an ash content of the rejected material at 88.0%.

The above results presented for the three coals are conservative in that the amount of coal loss is minimal given the relatively high reject ash contents. An additional amount of material could be rejected economically if the loss of a small amount of coal is balanced with the cost of transportation.

TECO TEST PROGRAM RESULTS SUMMARY – ROUND 2

The second round of tests at the TECO operation was conducted to verify the preliminary performance results for the Falcon raw coal obtained in the Round 1 tests, to produce sufficient sample quantities for a detailed washability study, and to evaluate 2 additional high ash raw coal feeds (from old coarse reject areas).

Falcon Coal

1. A total of 7 more tests were conducted on the Falcon raw during the Round 2 testing.

2. The first test was a total of 40 increments composited over an extended operating period for the unit of almost 1 hour. The optimal operating parameters established for the extended operating test were based on the performance results from the Round 1 tests. The 40-increment composite confirmed that the unit was capable of rejecting 40% of the raw feed while producing an ash content of 90% in the rejected material.

Third Fork Coal

1. A total of 8 tests were conducted on the material obtained from the Third Ford coarse reject area.

2. The tests indicate the 20% of the coarse reject feed can be rejected with an ash content of 80% or greater in the rejected material.

3. Additional tests were conduct to evaluate the effect of opening the reject gate located at the reject end of the deck, which appeared to have a minimal effect on the separation efficiency.

4. Two tests were conduct with the mass feed flow rate at 10 tph (double the normal rate). The results for these tests indicate a separation performance similar to the results at the normal flow rate.

Turkey Pen Coal

1. A total of 8 tests were conducted on the material obtained from the Turkey Pen coarse reject area.

2. The tests indicate that 20% of the coarse reject feed can be rejected with an ash content of 85% or greater in the rejected material.

3. Additional tests were conducted to evaluate the effect of opening the reject gate located at the reject end of the deck, which appeared to have a minimal effect on the separation efficiency.

4. Two tests were conducted with the mass feed flow rate at 10 tph (double the normal rate). The results for these tests indicate a separation performance similar to the results at the normal flow rate.

JAMES RIVER TEST PROGRAM RESULTS SUMMARY

The primary objectives for the test program at the James River operation were to evaluate the performance of the FGX dry coal cleaning technology to reject high density material at the mine site to reduce transportation and processing costs at the preparation plant, and to determine the potential for removing sufficient high ash material from the run-of-mine (ROM) raw coal to provide a product that would meet quality specifications for targeted steam markets.

McCoy-Elkhorn Coal

1. A total of 6 tests were conducted on the McCoy-Elkhorn raw coal. The first 5 tests (Tests 11 – 15) used coal that was screened across a vibratory screen which had ¼ inch apertures. The 6th test (Test 27) was conducted using an un-screened (ROM) feed.

2. The mass yield and ash values determined for the results for Tests 11 - 15 include blending of the screen underflow stream (-¼ inch material) and the dust stream with the dry coal cleaner product.

3. The results for Tests 11 - 15 indicate that 20% of the raw coal feed, which contained about 85% ash, can be rejected by the dry coal cleaner when treating run-of-mine coal from the McCoy-Elkhorn operation. Removing the high ash material will reduce the raw coal ash content from about 45% to 35%.

4. The performance results for Test 27 indicate that treating the ROM coal without prescreening is less effective. The data suggests that 20% of the total coal can be rejected but the reject material would contain only about 80% ash.

Other Coals

1. Testing was conducted on four other raw coals delivered to the test site:
    a. Highwall Miner Coal (Tests 1 – 5, 30)
    b. No. 8 Bottom Coal (Tests 6 – 10, 28)
    c. Amburgy Coal (Tests 16 – 20, 29)
    d. Alma Mine 77 Coal (Tests 21 – 26)

2. A total of 6 tests were conducted on each of the other raw coals. The first 5 tests used coal that was screened across a vibratory screen which had ¼ inch apertures. The 6th test was conducted using an unscreened (ROM) feed.

3. The mass yield and ash values determined for the results for the first 5 tests for each raw coal include blending of the screen underflow stream (-1/4 inch material) and the dust stream with the dry coal cleaner product.

4. The separation performance results for the Alma Mine 77 raw coal indicate that sufficient high ash material can be rejected by the unit to produce a steam market coal with an ash content of about 20% at a product yield of 40 – 45%.

INTRODUCTION

Project Goals

The project was developed and proposed to demonstrate the use of a dry cleaning technology for coarse coal to improve the energy efficiency and economics of extracting eastern Kentucky coal as well as reducing the environmental impacts associated with transporting and disposing reject material. In addition, the ability of the technology to recover energy from coarse coal reject material was demonstrated. The project directly addressed several recommendations in the 2005 Kentucky Comprehensive Energy Strategy including:

Recommendation 6:	The Commonwealth of Kentucky should work with industries, businesses, schools, universities and communities to promote and give preference to energy-efficient products and practices.
Recommendation 7:	The Commonwealth of Kentucky should support energy assessment initiatives that will help our industries and businesses improve their profitability through energy efficiency and resource management.
Recommendation 33:	Promotion of the recovery of the energy resources inherent to abandoned coal refuse and the proper reclamation of those properties.

The specifics of how the project addressed the recommendations will be presented in the following sections.

Energy Problem

Kentucky coal mining is a $4.13 billion industry and has an economic impact of about $9 billion annually. However, the production from the most active, high quality coalfield is in jeopardy of decreasing significantly within the next decade if new technologies are not adopted. It has been estimated that the eastern coalfields retain nearly 85% of the original coal reserves after two centuries of escalating production with a 52.3 billion ton resource base. The eastern coalfield is considered one of the largest resources of low-sulfur, high-BTU coal in the United States and it extends into southern West Virginia and southwestern Virginia. In a study reported by Weisenfluh et al. (Kentucky Geological Survey, IC 59, 1998), nearly 52% of the remaining Eastern Coalfield resources are located in coal seams that are 14 to 28 inches thick while 31% are in 28 to 42 inch thick seams. To economically extract these coals, it is necessary to use equipment with fast advancement rates, which generally requires mining with equipment that is oversized compared to the seam height. As a result, a significant amount of out-of-seam rock is removed, loaded, and hauled to preparation plants. The majority of eastern Kentucky coal operations have high reject rates of 50% – 70% (source: mining companies) which means that the run-of-mine (ROM) material is being extracted, loaded, and hauled at distances up to 20 miles to a preparation plant where only 30% -

50% of the material is recovered as high-quality coal. This indicates that over twice the electricity and other fuels are being expended today as compared to the lower reject conditions over a decade earlier. In addition, larger coarse reject areas are now required which negatively impact the environment.

A typical mining operation for TECO Coal Company has a capacity of 450 tons/hr or 2.95 million tons annually. At one coal mine, the haul distance is 20 miles to the preparation plant. The amount of fuel expended to haul the coal to the plant is about 0.5 gallons/raw ton. Since about 70% of the coal is rejected at the plant, the fuel requirement per clean ton is 1.66 gallons. Given that each gallon of fuel has an energy value 130,000 Btu, the total amount of energy expended to haul the run-of-mine material is 192 billion Btu. At the preparation plant, the energy required to process the raw coal is 9.55 kWh/raw ton or 295 billion Btu annually (Willis, TECO Coal, 2007). Clearly, the presence of the large amount of rock significantly elevates the amount of energy required to haul and process the coal by about 200%. In addition, the large amount of coarse waste leads to a negative environmental impact by requiring a larger area for disposal.

The eastern Kentucky coalfield is characterized as having a very high energy value and has been used in the past and in the present time as a metallurgical coal. To meet coal quality requirements, past practices used low density separations with sometimes inefficient technologies. As a result, a significant amount of high energy coal exists in a number of coarse gob piles in eastern Kentucky. An example is the old Chisolm coarse gob area located near Sidney, Kentucky. Washability analysis conducted on the coarse gob material by Precision Laboratories revealed that nearly 45% of the coarse waste material has a heating value of 10,500 Btu/lb. Recovery of the coal with similar heating values from coarse reject areas throughout the state would significantly enhance the state's energy resource base (Recommendation 33).

Potential Impact

Using a dry clean coal technology at the mine site to reject the high-density rock would significantly enhance energy efficiency, improve mining economics and reduce the environmental impacts of mining eastern Kentucky coal. For example, recent tests on a run-of-mine coal similar to the TECO coal revealed that the dry coal cleaning unit can remove pure rock that accounts for 37.4% of the total coal. The rejected material had an ash content greater than 85% thereby indicating little or no coal loss. If 37.4% of the mined material is removed before haulage (1.1 million tons annually), the amount of energy savings associated with transportation is 72 billion Btu annually (=192 billion Btu – 2.95 million tons x 0.626 x 65000 Btu fuel/ton coal), which equates to a 37.5% reduction in transportation energy.

Since less material is being processed, the operating time for the preparation plant to recover the same amount of coal will decrease thereby resulting in a drop in power usage. The amount of coal that will be processed by the wet cleaning plant after rock removal and haulage is about 1.85 million tons annually. Based on a power

consumption rate at the plant of 9.55 kWh/ton, the reduction in electric usage at the plant has an energy value of 110 billion Btu annually.

To determine the net energy efficiency benefit, the electric usage of the dry clean coal technology must be considered. A 500 tph dry separator requires 1,538 kW to operate. If the annual operating time is 6,139 hours, the total energy requirement is 9.442 million kWh or 99 billion Btu annually. As a result, the net reduction in energy requirements is 83 billion Btu annually (=72 + 110 - 99). Therefore, the use of a dry coal cleaning unit at the mine site will reduce the energy requirement for haulage and processing eastern Kentucky coal by 17% (Recommendation 6). This value does not take into account the energy used to store and reclaim the coarse reject disposal area.

The net benefit is much larger when economics are considered. The typical cost for transporting coal is $0.30/ton-mile. For the TECO site, the reduction in haulage cost is projected to be $6.6 million annually (=$0.30/ton-mile x 20 miles x 1.1 million tons rock/yr). The reduction in costs at the wet processing plant is projected to be $2.15 million annually (=$1.95/t x 1.1 million tons rock/yr). The cost of operating the dry clean coal unit is $0.50/raw ton which equates to $1.475 million annually. Therefore, the total estimated profit gain for TECO would be $7.3 million annually for a $2.5-$3.0 million investment (Recommendation 7). Until the testing programs were conducted, high capital risk due to the lack of performance data prevented the technology from being adopted for this application. Following the testing, preliminary reports were submitted to the coal companies with separation performance data that provided sufficient data to conduct a thorough evaluation for using the FGX dry coal cleaning technology.

RESEARCH DESCRIPTION

Objectives

A density-based dry coal cleaning technology commercially marketed in China has the potential to provide efficient removal of coarse rock from run-of-mine feed and recover a valuable energy source from coarse waste in Kentucky. Although the technology has been successful in the Chinese coal industry, considerable development work is needed before this technology can be used successfully for Kentucky applications. Performance data and operational characteristic information must be collected to significantly reduce the perceived risk of investment. There is currently only one production-scale unit under construction and evaluation in the United States.

The project involved multiple organizations; i) an equipment manufacturer which represents the dry coal cleaning technology in the U.S. (Eriez Manufacturing, Erie, PA), ii) two major Kentucky coal producers (TECO Coal and James River Coal), and iii) the University of Kentucky. A 5 metric ton/hr (tph) pilot-scale test unit incorporating the density-based dry coal cleaning technology was set up and operated at the two mining companies operations in Kentucky. The unit was used to evaluate the separation performance for several run-of-mine coals and coarse waste materials. The specific objectives included:

i. Demonstrate that the dry coal cleaning technology has the potential to reject at least 50% of the high-density rock existing in the run-of-mine coal currently extracted, hauled, and processed in eastern Kentucky;

ii. Perform an energy and economic analysis to quantify the potential benefits in using the dry separator for removing high-density rock prior to haulage and processing with a target of at least 15% reduction in energy across the total system;

iii. Optimize the process for recovering coal with a heating value greater than 10,000 Btu/lb from coarse waste material produced from previous mining and processing practices;

iv. Collect performance data that can be provided to Kentucky mining operators and consultants so that educated decisions can be made pertaining to the installation and use of the dry coal cleaning technology.

Methodology

To be successfully applied in the industrial sector, a technology used to reject high-density rock near the extraction point must be capable of meeting the following requirements:

- The ability to achieve a high relative density separation of around 2.0 SG;

- A separation performance that prevents the loss of coal to the reject stream;
- Efficient cleaning of the coarse particle size fractions;
- Low (or no) water requirements to minimize effects on product transportation and refuse storage while also limiting water treatment constraints;
- A mobile system which will allow movement with the mining operation;
- Simple operating and low maintenance characteristics;
- Low operating and capital costs.

A promising technology that appears to be capable of meeting these requirements is the FGX compound dry cleaning separator. The FGX unit, which has been under development in the Chinese coal industry (Li et al., 2006), is a pneumatic process that operates without water. Recent data obtained from studies conducted in China indicate that the unit has the potential to provide an effective separation for particles as coarse as 80 mm (3 inches) to a lower size limit of around 3 mm (0.1 inches). The test data also indicate that the process is insensitive to surface moisture content up to a value of 7% by weight. The FGX unit has the ability to provide a relatively high density separation of around 2.0 SG, while achieving probable error (Ep) values that range from 0.15 to 0.25 (Lu et al., 2003).

Process Description

The FGX dry cleaning system employs the separation principles of an autogenous medium and a table concentrator as shown in Figure 1. The feed is introduced into a surge bend from which the underflow is controlled using an electro-magnetic feeder. The separation process generates three product steams, i.e., deshaled product, middlings, and tailings. Two dust collection systems are employed to clean the recycled air and to remove the dust from air being emitted into the atmosphere. The separating compartment consists of a deck, vibrator motors, air chamber, and supporting mechanism. A centrifugal fan provides air that passes through a perforated deck surface at a rate sufficient to transport and fluidize the particles. Riffles located on the deck direct material toward the back plate with the action of the vibrating table. The deck width is reduced from the feed end to the final refuse discharge end. Upon introduction of feed coal into the separation chamber, a particle bed of a certain thickness is formed on top of the deck. Low density particles (such as coal) form the upper layer of the bed and the particles are discharged along the front length of the table. High density particles (such as rock) are sink to the bottom of the bed and are forced by both vibration and the continuous influx of new feed material to the narrow end of the table where the final refuse is discharged.

Feasibility

Both the Principal Investigator (Rick Honaker) and the technical assistant (Robert Bratton) toured a 128 ton/hr operation using the FGX Separator in China during October 2006. The coal being treated was from an underground mining operation extracting bituminous coal. The unit seemed very simplistic with very open construction that should be favorable for routine maintenance. The separation performance appeared to

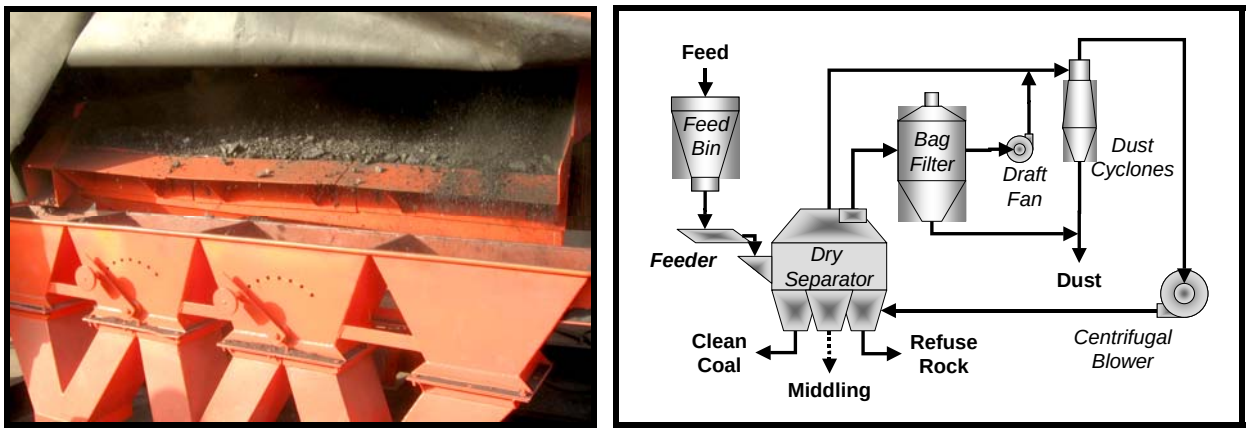


Figure 1. Photograph and flowsheet of the FGX dry separator technology.

provide very efficient rejection of high-density rock as described above. There were no items of concern recognized during the visit.

A one year research project was funded by the U.S. Department of Energy (DE-FC26-05NT42501) in 2005 that involved the evaluation of the FGX separator. Under the guidance of the Principal Investigator, the project focused on western U.S. and Gulf Coast coals. The results obtained from lignite and sub-bituminous coals indicate an efficient high-density separation. For the Powder River Basin sub-bituminous coal that is currently considered waste, the pilot-scale FGX unit reduced the ash content from 30% to around 6% with mass yield values near 70%. Excellent sulfur and mercury rejections were realized from the treatment of Gulf Coast lignite. Due to the nature of the low rank coals, no performance data that could be transferred to assess the potential with Kentucky coals could be produced. However, the Chinese experience indicates very good potential for success.

A concern is the maximum surface moisture limitation of 7%. Although a rough survey of operators in eastern Kentucky indicates moisture levels of around 6% in the plant feed coal, several underground coals produced in Kentucky may have surface moisture greater than the maximum limit. As a result, screening at around ¼-in may be required to remove the high surface area fine coal from the FGX feed. Since dry screening is also sensitive to feed moisture, a specialty screen commercially known as a roller screen may be required. Roller screens are commercially used by Consol Energy, Arch Coal, and others to separate run-of-mine coal at ¼-in but the capitol cost and maintenance requirements are relatively high. This issue will be assessed for the various Kentucky coals tested in this project.

Statement of Work

Four project tasks covering a period of approximately 12 months were required to successfully complete the work. The project tasks include (i) equipment setup, (ii) on-site testing, (iii) process evaluation, and (iv) energy efficiency and economic assessment. A university research team in conjunction with a process equipment

manufacturer and two Kentucky coal producers joined efforts to successfully complete the project. Eriez Manufacturing of Erie, Pennsylvania provided a 5 metric ton/hr pilot-scale dry coal cleaning separator and technical assistance for the project. TECO Coal Corporation provided a test site and feed material at the Clintwood Elkhorn Mining Company operation near Feds Creek, Pike County, Kentucky. James River Coal Company provided a test site and feed material at the Leeco complex near Jeff, Perry County, Kentucky. The university research team included a professor, graduate students, a technician from the Mining Engineering department at the University of Kentucky, and a technical assistant from Eriez Manufacturing.

Task 1 – Equipment Setup

The pilot-scale FGX compound dry separator unit is installed in a 24 foot long shipping container and transported on an over-the-road flat-bed semi-trailer. All the processing and material handling equipment required for testing programs is transported on the trailer. The set up to become operational at each site, which includes unloading all the equipment except the 24 foot container and arranging the material handling equipment, required approximately 4 hours. Figure 2 shows the unit and equipment as transported and the operational setup at the TECO test site.

Figure 2. FGX unit as transported (left) and set up for testing (right).

The coal companies provided electrical power for the unit as well as personnel and lifting equipment for unloading and arranging the vibrating screen and associated material handling equipment.

Task 2 – On-Site Testing

The objective of this task was to determine the optimum operating parameters for the dry coal cleaning technology for treating each of the ROM raw coal and coarse reject feeds to be evaluated. For all the tests, the feed was maintained at the recommended top size for the prototype unit, i.e., 63.5 mm (2 1/2 inches). Controllable parameters examined in the test program included feed mass flow rate, deck length-wise angle, deck vibration frequency, fluidizing air flow rate, and effect of screened versus non-screened feed. Based on numerous tests conducted with

the pilot-scale unit within the previous 2 years, the above controllable parameters had been determined to produce the significant variability in the results. While other parameters (deck width-wise angle, deck vibration amplitude, air distribution, and bed depth) will contribute to variability in the results, the previous testing programs had found these parameters produce a minimum effect and were held constant at the previously determined optimum point.

To measure the effect of the controllable parameters on separation performance at the TECO site, an exploratory program involving random variations in the operating parameter values was conducted July 9 – 13, 2007 to determine the operable parameter value ranges. An extended operating period study was conducted August 28 – 30, 2007 using parameter value ranges established by the initial exploratory test program. For the tests at the James River site October 29 – November 2, 2007, the parameter value ranges were established by evaluating the tests results from the TECO tests.

For each test, samples of the feed, 6 splits taken at equal lengths along the discharge lip of the deck, and the dust from the baghouse were collected and subjected to moisture, ash, and sulfur (TECO tests only) analysis. The separation performance response variables that were monitored included mass yield to either reject or clean coal, reject and product ash content, and separation efficiency.

This task was completed in a collaborative effort between the University of Kentucky, Eriez Manufacturing, and the participating coal producers.

Task 3 – Process Evaluation

The objective of this task was to compile and analyze the data generated by the various test programs. The performance indicators evaluated for each ROM raw coal and coarse reject included separation density, quantity of high density material rejected with minimal loss of recoverable coal, and quantity of low-density product recovered for a targeted steam market without loss of saleable coal to the reject. These values were obtained by evaluating the ash rejection versus the ash content for the TECO tests and James River tests. In addition, one ROM coal at James River was evaluated for clean coal recovery versus clean coal ash. The test results and evaluations for each feed source are presented in the “Testing Results” section below.

The analytical data required for these evaluations was provided by independent laboratories.

Task 4 – Energy Efficiency and Economic Assessment

An energy efficiency and economic evaluation to assess the cost effectiveness of the process and its potential for full commercial deployment for at the TECO site to reduce transportation and processing costs was conducted with the aid of company

management and based a company initiated feasibility study. For the James River site, the evaluation centered on the energy efficiency and economic benefits attainable with producing a targeted steam market product without the need to clean the raw coal in a preparation plant. The estimated capital costs as well as operational costs are considered in the evaluations. At the TECO site, the proposed process was evaluated as a pre-treatment to recovering energy from coarse reject material. The evaluations and relevant considerations associated with the assessments are presented in the “Energy Efficiency and Economic Benefits - Technology Application Considerations by the Coal Companies” section below.

TESTING RESULTS

TECO Test Program Results – Round 1 Tests

The first round of testing at the TECO site involved raw from 3 separate deep mine sources and seams. The Falcon raw coal from the Hagy seam is delivered by truck with a haul distance of 19 miles (one way). The Snapco raw coal from the Splashdam seam is delivered by truck with a haul distance of 18 miles. The Elkhorn No. 2 raw coal from the Alma seam is delivered by truck with a haul distance of 23 miles.

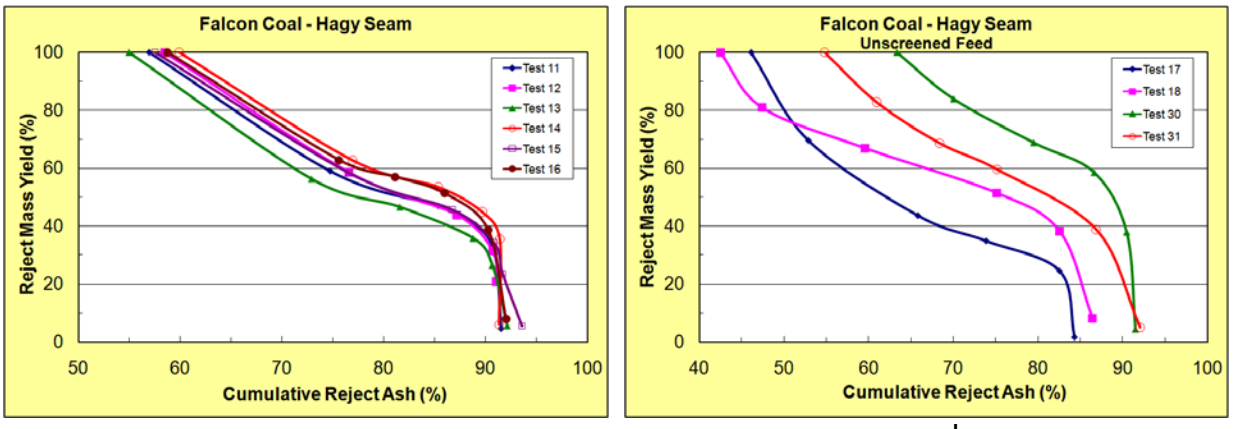
The main objective for the Round 1 Tests was to conduct an exploratory evaluation on the 3 raw coal sources to determine which of the coals responded most favorably to the FGX dry coal cleaning technology. The separation performance results discussed in the sections to follow are based on cumulative yield and ash content reporting to the reject stream. The results for the tests with prescreened feed include a representative portion of the screen underflow (-¼ inch material) and baghouse dust combined with the first product sample split from the deck.

Falcon Coal – Hagy Seam

1. A total of 12 tests were performed on the Falcon raw coal under varying operating conditions including experiments with screened and unscreened feed. A vibrating screen with ¼ inch aperture was used for prescreening purposes.

2. The separation performance results achieved on the prescreened coal over a range of operating parameter values were relatively consistent.

3. Based on the performance results, the optimal conditions appear to be represented by Test 14 where approximately 45% of the material can be rejected by applying the FGX technology and the rejected material will have an ash content of near 90%. The results are showed in Figure 3-a. The results also



a b

Figure 3. Separation performance for the Falcon Coal with the feed screened at ¼ inch (a) and with unscreened feed (b).

indicated that as much as 57.5% of the total +¼ inch Falcon raw coal can be rejected with an ash content of 89%.

4. The performance results achieved on the unscreened ROM raw coal was similar to those achieved on the prescreened material. As shown in Figure 3-b, a relatively sharp separation was obtained during Test 30 which indicates that 37.9% of the total feed can be rejected with the reject material having an ash content of 90.5%. Test 30 also represented the feed with the highest feed ash content (63.3%). Tests 17 and 18 were also tests with unscreened feed and had a larger portion of -¼ inch material, 56% and 52%, respectively. The higher fraction of fine material appears to degrade the separation performance.

5. Two tests were conducted with screened feed to evaluate the effect of increasing the mass feed flow rate for the unit with the Falcon raw coal. The performance results for Tests 40 and 41, shown in Figure 4, indicate that under the operating conditions for Test 40 approximately 20% of the total feed can be rejected with an ash content of 91% in the rejected material.

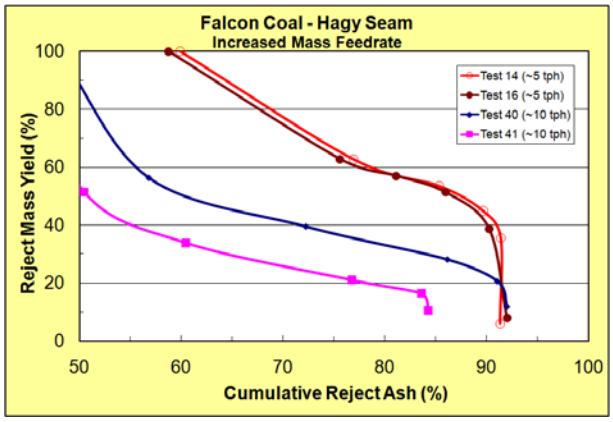


Figure 4. Separation performance for the Falcon Coal with increased mass feedrate screened at ¼ inch compared with standard feedrate.

<u>Snapco Coal – Splashdam Seam</u>

1. A total of 5 tests were performed on the Snapco raw coal representing coal from the Splashdam seam, a high ash feed (>60%), under varying operating conditions including experiments with screened and unscreened feed. A vibrating screen with ¼ inch aperture was used for prescreening purposes.

2. The separation performance results on the high ash feed indicated that the FGX technology can be used to reject about 25% of the total raw feed while producing a reject containing near 87% ash. All the tests for the screened feed produced similar results as shown in Figure 5.

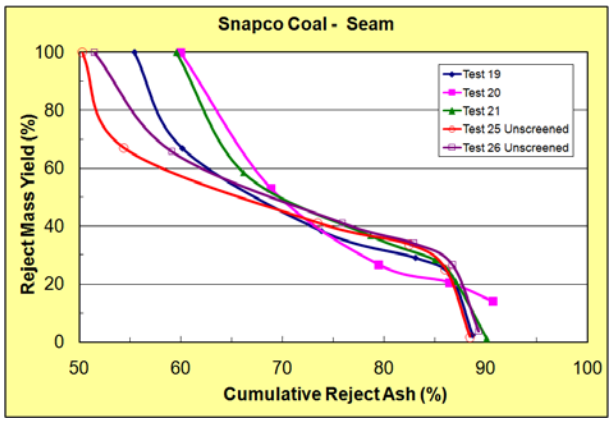


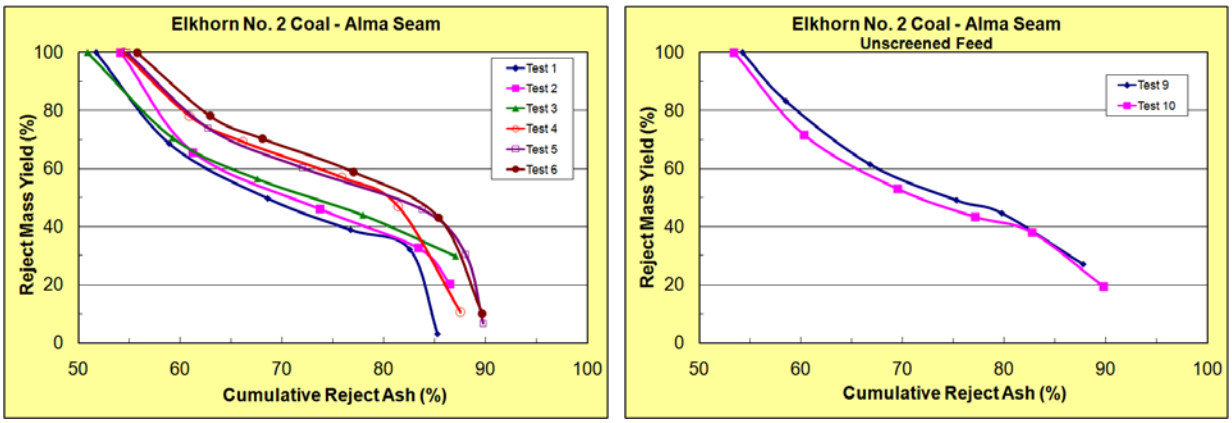
Figure 5. Separation performance for the Snapco Coal with the feed screened at ¼ inch and with unscreened feed.

3. Similar results, also shown in Figure 5, were achieved on the unscreened raw feed. The findings indicate that about 27% of the total Snapco ROM coal can be rejected with an ash content of about 87%.

Elkhorn No. 2 Coal – Alma Seam

1. A total of 11 tests were performed on the Elkhorn No. 2 raw coal under varying operating conditions with prescreened and unscreened feeds. A vibrating screen with ¼ inch aperture was used for prescreening the feed for the first 9 tests.

2. The results for Tests 1 – 6 are shown in Figure 6-a. The best ash rejection performance for the Elkhorn No. 2 coal was produced under slightly different operating conditions than for other coals tested. For Tests 5 and 6, the deck length-wise slope was set at 0.5 degrees less than that which has been found to be optimal for other coals. These tests indicate that approximately 36% of the nominal +¼ inch Elkhorn No. 2 feed can be rejected with an ash content of 88% for the rejected material.



a b

Figure 6. Separation performance for the Elkhorn No. 2 Coal with the feed screened at ¼ inch (a) and with unscreened feed (b).

3. The results for the unscreened feed, shown in Figure 6-b, indicate a marginal potential for good separation. Although the results indicate that the high density material can be separated from the feed, the loss of coal to the reject increases significantly as the amount of reject increases.

4. Three additional tests were conducted using the Elkhorn No. 2 raw coal to determine the effect of feed mass flow rate on the separation performance. As shown in Figure 7, at a feed rate of approximately 50% more than the standard test conditions (Test 7), the separation performance appears to be similar to the best performance for the +¼ inch screened feed (Tests 5 and 6).

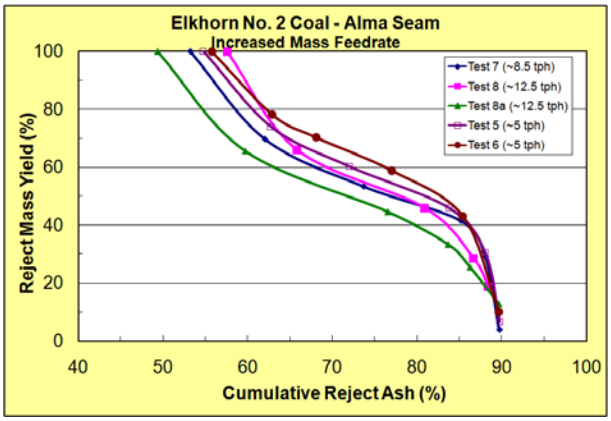


Figure 7. Separation performance for the Elkhorn No. 2 Coal with elevated feed mass flow rates.

The results presented for the three coals are conservative in that the amount of coal loss is minimal given the relatively high reject ash contents. An additional amount of material could be rejected economically if the loss of a small amount of coal is balanced with the cost of transportation.

TECO Test Program Results – Round 2 Tests

The second round of testing at TECO was designed to confirm and better quantify the separation performance obtained for the Falcon raw coal and to evaluate the potential to reject high density material from 2 coarse reject disposal areas.

Falcon Coal – Hagy Seam

1. A total of 7 test samples were collected for the Falcon raw coal. A vibrating screen with ¼ inch aperture was used for prescreening the feed for the tests.

2. Test 1 sample was a total of 40 increments composited over an extended operating period for the unit of almost 1 hour. Tests 2 – 7 were 3 increment samples collected at equal intervals during the collection of the Test 1 sample. The optimal operating parameters established for the extended operating test

were based on the performance results from the Round 1 tests. The separation performance results for the 7 tests are shown in Figure 8. The 40-increment composite indicates that the unit was capable of rejecting 40% of the raw feed while producing an ash content of 90% in the rejected material.

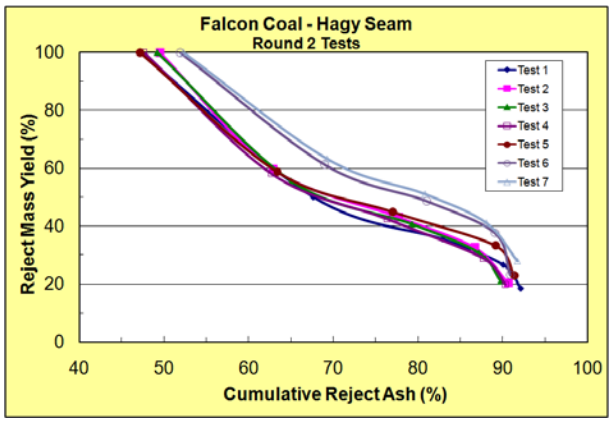


Figure 8. Separation performance for the Falcon Coal with optimal operating parameters and for an extended operating period.

Third Fork Coarse Reject Area

1. A total of 8 tests were conducted to evaluate the potential for separating high density material from the Third Fork coarse reject area. A vibrating screen with ¼ inch aperture was used for prescreening the feed for the tests.

2. The standard range of operating parameters were used for 6 of the tests. Another operating parameter for the unit is the ability to open a gate at the refuse end near the back wall of the deck. The gate is opened at times to aid in unloading the deck of reject material for feeds containing a high portion of high density material. Four tests (8, 9, 12, and 14) were conducted over the range of operating parameters with the gate closed and 4 tests (10, 11, 13, and 15) were conducted with the gate open. Figure 9 shows the separation performance results for the tests for all the tests. The results for the tests with the gate closed indicate the FGX technology can reject about 20% of the total feed with an ash content of 80% in the rejected material.

3. The results for the tests with the gate open consistently indicate lower reject ash content (about 74%) at the same reject mass yield compared with the tests with the gate closed.

4. In addition to operating the unit with the refuse gate open, for Tests 11 and 15, the feed mass flow rate to the unit was increased to about 10 tph. The separation performance at the increased flow rate appears to match the performance at the lower flow rate.

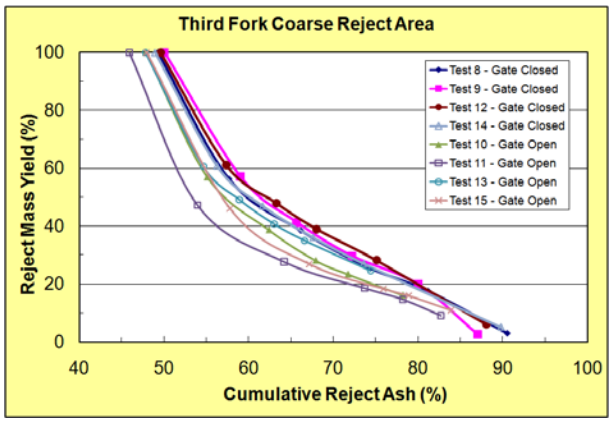


Figure 9. Separation performance for the Third Fork Coarse Reject Feed with refuse gate closed and with refuse gate open.

Turkey Pen Coarse Reject Area

1. A total of 8 tests were conducted to evaluate the potential for separating high density material from the Turkey Pen coarse reject area. A vibrating screen with ¼ inch aperture was used for prescreening the feed for the tests.

2. The standard range of operating parameters were used for 6 of the tests. Similar to the Third Fork tests, 4 tests (16, 17, 19, and 20) were conducted with the reject gate closed and 4 tests (18, 21, 22, and 23) were conducted with the gate open. Figure 10 shows the performance for all the tests.

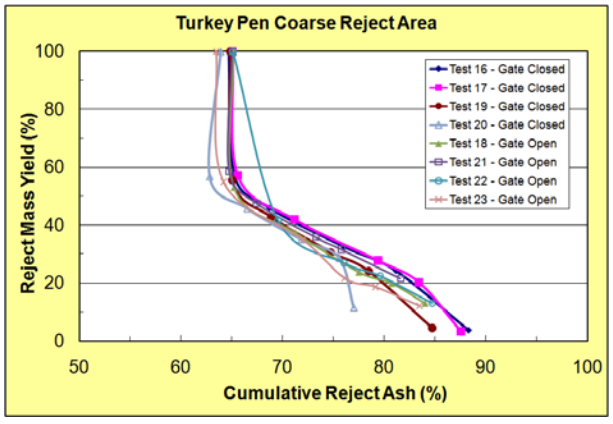


Figure 10. Separation performance for the Turkey Pen Coarse Reject Feed with refuse gate closed and with refuse gate open.

3. The separation efficiency for the Turkey Pen coarse reject area was similar to those for the Third Fork material with the gate closed. The results for the closed gate tests versus the open gate tests indicate that about 20% of the total feed can be rejected with an ash content of 84% in the rejected material. Also, the

data indicate very little difference in the separation efficiency for the various operating conditions.

4. In addition to operating the unit with the refuse gate open, for Tests 22 and 23, the feed mass flow rate to the unit was increased to about 10 tph. The separation performance at the increased flow rate appears to match the performance at the lower flow rate.

The second round of testing at the TECO confirmed that the FGX dry coal cleaning technology can efficiently separate a significant portion, about 40%, of the Falcon raw coal by rejecting the high density material, which has an ash content of about 90%.

The performance results for the feeds from the coarse reject areas indicate that the FGX technology may be capable of separating the high density material, but additional field testing is required to develop a range of standard operating parameters that would yield an improved separating efficiency.

James River Test Program Results

The testing at the James River site involved raw coals from 5 separate sources. The Highwall Miner raw coal was received from an active highwall mining operation that transports the raw coal a short distance to the Leeco Preparation Plant. The No. 8 Bottom raw coal was received from the surface mine operation that supports the Highwall mining operation and contains out-of-seam dilution and “rash” material. The coal is processed at the Leeco Preparation Plant. The McCoy Elkhorn raw coal was received from the McCoy Elkhorn complex where the ROM coal is transported by truck approximately 18 miles to the Bevins Branch Preparation Plant. The Alma Mine 77 raw coal was received from the Blue Diamond complex where the ROM is transported by truck approximately 10 miles to the Leatherwood Preparation Plant. The Amburgy mine operation is adjacent to the Leeco Preparation Plant and the raw coal is delivered by conveyor to the raw coal stockpile.

The main objectives for the testing at the James River site was to evaluate the potential for the FGX dry coal cleaning technology to remove high density material in the various raw coals. For the Alma Mine 77 coal, the goal was to remove a sufficient amount of the high density material so that the coal could be blended with the direct ship coal for a targeted steam market, thus eliminating the need to process the coal. For the other 4 coals, the goal was to determine the capability to remove the high density material for the ROM coal which could significantly reduce transportation and processing costs.

A total of 6 tests were conducted for each coal source. Five tests were conducted to evaluate the separation performance for a screened feed across the range of the standard operating parameters. A vibratory screen with ¼ inch aperture was used for prescreening the feed for the tests. The results for the tests with prescreened feed include a representative portion of the screen underflow (-¼ inch material) and baghouse dust combined with the first product sample split from the deck. One

additional test was conducted for each coal using unscreened ROM feed. The separation performance results are discussed below.

Highwall Miner Coal

1. The separation performance results for the Highwall Miner raw coal are shown in Figure 11 for both the 5 tests with screened feed (Tests 1 – 5) and the single test with unscreened feed (Test 28). The results indicate that a high ash content reject (80% or greater) can only be achieved at relatively low reject yields (0.5 – 1.5%).

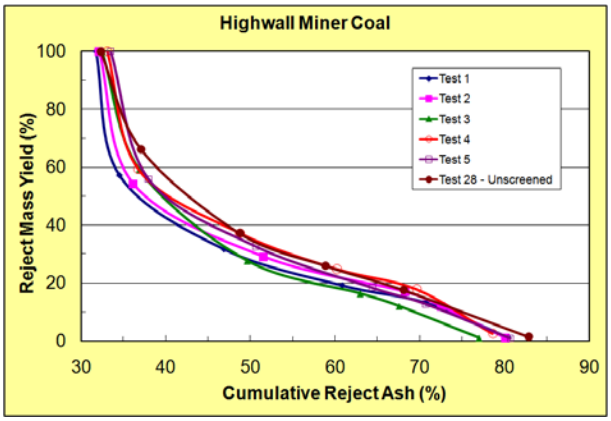


Figure 11. Separation performance for the Highwall Miner Coal with screened and unscreened feed.

2. The separation performance for the unscreened feed appeared to be similar to the performance for the screened feed.

3. The Highwall Miner raw coal appears to be a poor candidate for the technology due primarily to the low portion of high density material in the feed.

No. 8 Bottom Coal

1. The separation performance results for the No. 8 Bottom raw coal are shown in Figure 12 for both the 5 tests with screened feed (Tests 6 – 10) and the single test with unscreened feed (Test 30). The results, which are similar to the performance for the Highwall Miner raw coal, indicate that a high ash content reject (80% or greater) is unachievable with the coal feeds that were tested.

2. The separation performance for the unscreened feed appeared to be just marginally better than the performance for the screened feed.

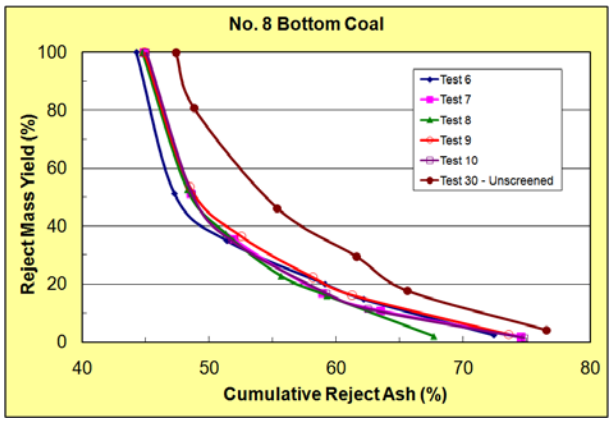


Figure 12. Separation performance for the No. 8 Bottom Coal with screened and unscreened feed.

3. The No. 8 Bottom raw coal, like the Highwall Miner raw coal, appears to be a poor candidate for the technology due primarily to the low portion of high density material in the feed.

McCoy Elkhorn Coal

1. The separation performance results for the McCoy Elkhorn raw coal are shown in Figure 13 for both the 5 tests with screened feed (Tests 11 – 15) and the single test with unscreened feed (Test 27). The results indicate that as much as 20% of the total raw feed can be rejected with an ash content in the reject of 85% or greater.

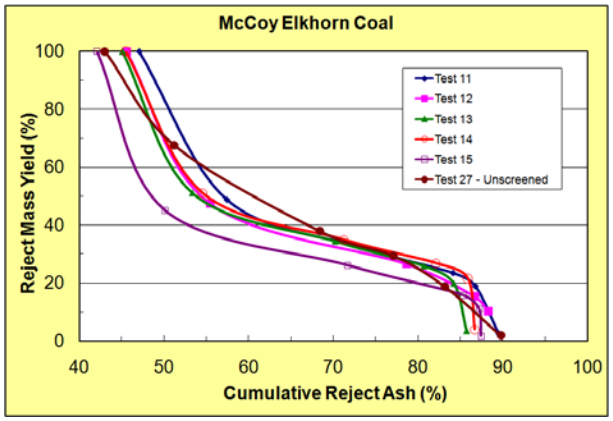


Figure 13. Separation performance for the McCoy Elkhorn Coal with screened and unscreened feed.

2. The results for the unscreened test indicated a less efficient separation than the screened test, but 20% of the raw feed could still be rejected with an ash content of about 80% in the reject.

3. The FGX dry coal cleaning technology can potentially reduce the transportation and processing costs associated with the McCoy Elkhorn raw coal.

Amburgy Coal

1. The separation performance results for the Amburgy raw coal are shown in Figure 14 for both the 5 tests with screened feed (Tests 16 – 20) and the single test with unscreened feed (Test 29). The results indicate that about 20% of the total raw feed can be rejected with an ash content in the reject of 88 - 90%.

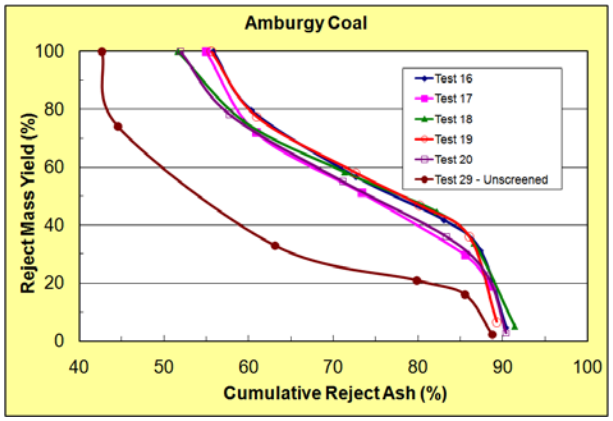


Figure 14. Separation performance for the Amburgy Coal with screened and unscreened feed.

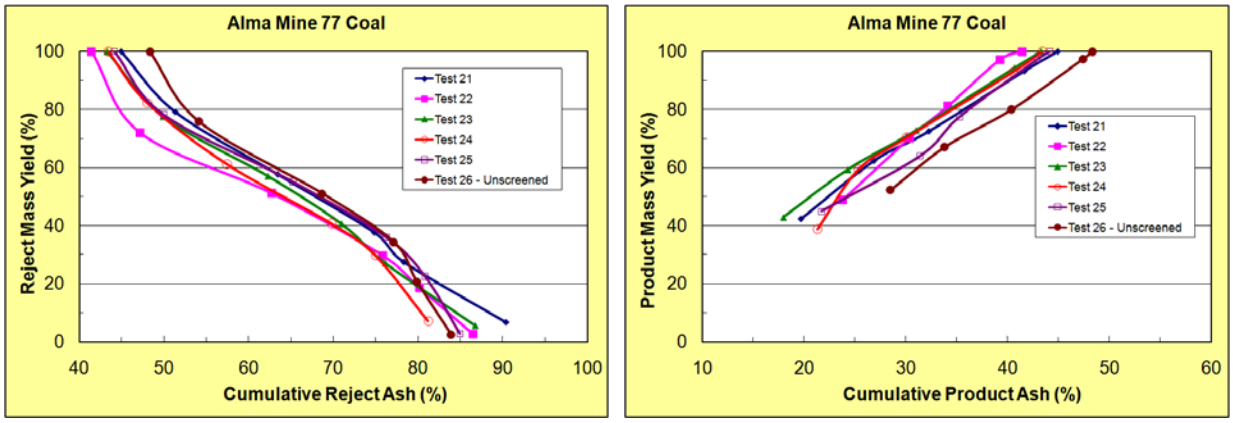
2. The results for the unscreened test indicate that the ash content in the reject would be about 81% when rejecting 20% of the raw feed.

3. The results for the 6 tests indicate that screening of the raw feed would be required to achieve the best separation efficiency for the Amburgy raw coal.

Alma Mine 77 Coal

1. The separation performance results for the Alma Mine 77 raw coal are shown in Figure 15 for both the 5 tests with screened feed (Tests 21 – 25) and the single test with unscreened feed (Test 26). The results indicate (Figure 15-a) that about 20% of the total raw feed can be rejected with an ash content in the reject of 80%.

2. The tests also indicate that a marketable steam coal product can be obtained with the Alma Mine 77 raw coal. Figure 15-b illustrates that a product with an ash content of about 20% can be produced at a yield of about 45%, based on the total feed. The combustible recovery for these tests was 60 – 70%. The reject, which would still contain recoverable coal, could be processed in the preparation plant.



a b

Figure 15. Separation performance for the Alma Mine 77 Coal with screened and unscreened feed for reject yield (a) and product yield (b).

3. The results for the unscreened test indicated that the separation efficiency for the ROM feed was very similar that for the screened tests. The -¼ inch fraction in the ROM was only 11.5%, which is considered an acceptable amount for the FGX dry coal cleaning technology if the surface moisture content is below 7 – 8%.

4. The results for the 6 tests indicate also that screening of the raw feed may be unnecessary to achieve an acceptable separation efficiency for the Alma Mine 77 raw coal.

ENERGY EFFICIENCY AND ECONOMIC BENEFITS - TECHNOLOGY APPLICATON CONSIDERATIONS BY THE COAL COMPANIES

After a review of the laboratory data for each of the test programs, a preliminary report was prepared and submitted to each of the participating coal companies. The preliminary report for each company summarized the activities of the test programs and presented the separation performance results for the various raw coal sources for that company. The report included the expected rejection of high density material and/or improvement in product quality for each source.

Each coal company evaluated the preliminary report and developed an economic analysis for applying the FGX dry coal cleaning technology to the situation that appeared to offer the best return on investment.

TECO Evaluation

The evaluation at TECO centered on applying the FGX technology to reject high density material in the Falcon raw coal from the Hagy seam. The ROM is transported by truck with a haul distance of 19 miles (one way). The following basis was developed for the evaluation of a dry coal cleaning plant and screening facility to be located near the mine portal:

1. Annual production – 600,000 ROM tons (2008 budget)

2. Estimated transportation (trucking) cost – $3.20 per raw ton

3. Reject yield for screened feed (+¼ inch) to dry coal cleaning plant, expected, from on-site test program – 57.5% (The system was evaluated based on processing the screened material in the FGX unit due the high percentage (~35%) of undersize material in the ROM coal.

4. Fraction of +¼ inch material in the ROM (from historical data for mine) – 64.5%

5. Estimated operating cost for dry coal cleaning facility and screening facility, including labor, materials, maintenance, and depreciation – $0.908 per raw ton

6. Annual tonnage processed at dry coal cleaning plant – 387,240 tons (=600,000tpy ROM x 64.5%)

7. Annual tonnage of high density material rejected at dry coal cleaning plant – 222,663 tons (=387,240 tons +¼ inch x 57.5% yield to reject)

8. Total annual savings for transportation – $712,522 (=222,663 tpy x $3.20 per ROM ton)

9. Total annual operating cost for the dry coal cleaning plant and screening facility – $544,800 (=387,240 tons +¼ inch x $0.908 per raw ton)

10. Annual cost savings – $167,722 (=$712,522 - $544,800)

The dry coal cleaning plant and screening facility was estimated to cost approximately $1.3 million. From the above study based on 600,000 tpy ROM production, the return on investment would take several years. Other factors which were considered relative to applying the technology were:

1. The permitting and construction of a coarse refuse disposal site near the mine portal would be required for the dry coal cleaning plant reject. Typically an underground mining site provides very little opportunity for refuse disposal. Also, the permitting process would take several months to several years.

2. At times, the ROM may exceed the moisture limit that would result in poor screening at ¼ inch. When this situation occurs, screening efficiency would denigrate and the high moisture undersize material would report to the dry coal cleaning facility which would reduce the capacity of the plant as well as cause blockage and restrictions in the system.

3. The dry coal cleaning plant and screening facility would be a remote facility (19 miles) from the preparation plant. Management of the operating staff and maintenance of the refuse disposal site would add additional responsibilities for the supervisors.

When all the above benefits and concerns were evaluated, TECO decided that installing a dry coal cleaning plant and screening facility would provide a less than desirable return on investment in additional to increasing the responsibilities for the preparation plant supervisors.

James River Evaluation

The evaluations at James River centered on applying the FGX technology to reject high density material in i) the Highwall Miner ROM coal and ii) the McCoy Elkhorn ROM coal. Applying the FGX technology for the Highwall Miner operation offered the opportunity to place the rejected high density material with the back fill on the active surface mining operation, which eliminated the need for a refuse disposal area. The technology was considered for the McCoy Elkhorn underground mine to reduce the transportation and processing costs associated with the high density material in the ROM coal. The company was unable to provide the detailed analyses for the evaluations, but preparation management offered comments that reflected the benefits and concerns considered for each of the evaluations.

Although the tests for the Highwall Miner raw coal indicated a relatively low amount of high density material (about 10%) that could be rejected with a high ash content

(>75%), any amount of rejected material diverted from the preparation plant would provide:

1. Reduced transportation costs for the raw coal to the preparation plant (10% of the transportation cost less the cost to handle the rejected material)

2. Reduced operating cost and refuse disposal cost at the preparation plant

3. Increased capacity for the Highwall Miner raw coal or other coals at the preparation plant

The major concern for applying the technology for the Highwall Miner raw coal was the substantial cost, above a typical installation, to “mobilize” the screening and dry coal cleaning operations. The screening and cleaning operations has to move along the bench as the mining operation advances. This mode of operation requires a unique design of the equipment either on skids or on a crawler unit. Additional mobile electrical power would be required either by upgrading the power supply for the mining operation or providing a separation power supply for the screening and cleaning operation. The company was unable to justify the installation for the Highwall Miner raw coal due to the higher capital cost, the uncertainty of the operating cost, and other unknowns associated with developing a mobile operation.

The tests for the McCoy Elkhorn raw coal indicated the technology could reject about 20% of the ROM coal. The application of the technology could reduce the amount of high density material transported to and processes by the preparation plant. The benefits for applying the technology were much the same as those noted above for the TECO application. The major concerns expressed for installing a screening and dry coal cleaning plant at the mine portal were also similar to the concerns noted for the TECO application. The company also commented that the estimated operating cost for the screening and dry coal cleaning facility would be almost $2.00 per ROM ton. The benefits failed to provide the company with the required return on investment to justify the installation of the facility.

CONCLUSIONS

The FGX dry coal cleaning technology, which is based on autogenous fluidized bed separation and table concentration principles, is widely used in other countries, most notably China, for upgrading raw coals containing coarse high density material.

A 5 metric tons per hour (tph) mobile pilot-scale unit was utilized to evaluate the applicability of the technology for three coal sources at TECO Coal Corporation's Clintwood-Elkhorn operation during the week of July 9th through 13th, 2007. A second round of tests was conducted at the same TECO operation during August 28th through 31th, 2007, to verify the results from the first round and to test feed from 2 coarse refuse areas. The unit was then moved to James River Coal Company's LEECO operation near Hazard, Kentucky where tests were conducted on highwall miner coal, a surface mine coal, and three underground mine coals during the week of October 29th through November 2nd, 2007. A total of 51 tests were conducted at the TECO site and 30 tests were conducted at the James River site.

The objective for most of the test programs was to maximize the amount of rock rejected by the unit while ensuring nearly 100% recovery of coal. When utilized at applicable operations, the rock rejection would significantly reduce transportation costs, increase the wet-cleaning plant capacity, and reduce environmental impacts of reject storage.

A wide range of raw coals was provided for evaluation during the testing programs at the 2 coal company sites. The separation performance results for the FGX technology were evaluated for each of the raw coals to determine the amount of high density (high ash) material that could be rejected without the loss any coal.

The results for the Falcon raw coal (Hagy seam) at the TECO operation offered the best separation performance of the 3 raw coals tested. A relatively sharp separation was obtained during Test 30 which indicated that 45% of the total feed can be rejected with the reject material having an ash content of 90%. And the separation performance results for the Snapco raw coal and the Elkhorn No.2 raw coal indicated that 25% or more of the total raw feed can be rejected with an ash content in the reject material of 85% or greater. The performance results for the 2 feeds from the coarse reject areas indicated that only about 20% of the high density material can be rejected with an ash content of 80 – 85% in the rejected material.

The results for the Amburgy raw coal at the James River operation offered the best separation performance of the 5 coals tested. A relatively sharp separation was obtained during Tests 16 and 19 which indicated that about 30% of the total feed can be rejected with the reject material having an ash content of almost 90%. This raw coal is delivered to the raw coal stockpile by conveyor at the Leeco Preparation Plant. In this situation, the only benefit for applying the FGX technology would be a reduction in the processing cost. The results for the McCoy Elkhorn raw coal indicated that as much as 20% of the total raw feed can be rejected with an ash content in the reject of 85% or

greater. The results for the Alma Mine 77 raw coal indicated that as much as 20% of the total raw feed can be rejected with an ash content in the reject of 80%. The results for the Alma Mine 77 raw coal also indicated that a steam market produce can be obtained having an ash content of about 20% with a product yield of 45%. For the Highwall Miner and the No. 8 Bottom raw coals (from the same surface operation), the results indicated that only about 10% of the raw coal can be rejected with an ash content in the reject of 75% and 65%, respectively.

The management at TECO, after reviewing the results of all the tests, developed an evaluation to determine the feasibility for applying the FGX technology for reducing the transportation and processing costs associated with the Falcon raw coal. Although the evaluation provided a positive return on investment for the application, the company had major concerns relating to disposal of the rejected material at the mine site, the remoteness of the operation from the preparation plant, and the variability of the moisture content in the ROM coal. As a result, the technology failed to be applied at the TECO operation.

The management at James River considered the FGX technology for reducing the high density material in the Highwall Miner raw coal and the McCoy Elkhorn raw coal. The application of the technology for the Highwall Miner raw coal failed to be justified due to the requirement for a “mobilized” unit for the screening and dry coal cleaning operations and the anticipated operating cost for the unit. Applying the technology for the McCoy Elkhorn raw coal failed to be justified due the anticipated high operating cost for the screening and dry coal cleaning operations and the requirement for permitting and constructing a refuse disposal area at the mine site.

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APPENDIX A

TEST PROGRAM DATA

TECO Coal Corporation
Elkhorn No. 2 Mine Coal - Round 1 Tests
Alma Seam

Test No.	Feed		Split	Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						Remarks
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
	Condition	Rate (tph)		Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	
1	screened	5	1	25.32	34.87	26.07	35.18	100.00	52.72	31.40	36.04	31.40	36.04	100.00	51.73	
			2	20.37	33.46	46.45	34.42	73.93	58.91	18.91	33.46	50.30	35.07	68.60	58.91	
			3	11.64	39.21	58.09	35.38	53.55	68.59	10.80	39.21	61.11	35.80	49.70	68.59	
			4	7.28	49.09	65.37	36.91	41.91	76.75	6.75	49.09	67.86	37.12	38.89	76.75	
			5	31.43	82.28	96.80	51.64	34.63	82.56	29.17	82.28	97.03	50.70	32.14	82.56	
			6	3.20	85.29	100.00	52.72	3.20	85.29	2.97	85.29	100.00	51.73	2.97	85.29	
			Dust	0.75	45.64											
2	screened	5	1	24.25	41.35	24.89	41.46	100.00	56.34	34.38	40.53	34.38	40.53	100.00	54.14	
			2	22.47	32.03	47.36	36.99	75.11	61.26	19.63	32.03	54.02	37.44	65.62	61.26	
			3	15.38	50.28	62.74	40.24	52.64	73.75	13.43	50.28	67.45	40.00	45.98	73.75	
			4	14.19	78.44	76.93	47.29	37.26	83.43	12.40	78.44	79.85	45.97	32.55	83.43	
			5	19.81	87.37	96.75	55.50	23.07	86.50	17.31	87.37	97.16	53.34	20.15	86.50	
			6	3.25	81.22	100.00	56.34	3.25	81.22	2.84	81.22	100.00	54.14	2.84	81.22	
			Dust	0.64	45.68											
3	screened	5	1	18.45	23.88	18.90	24.34	100.00	52.64	29.41	30.77	29.41	30.77	100.00	50.87	
			2	16.22	25.91	35.12	25.06	81.10	59.24	14.12	25.91	43.53	29.20	70.59	59.24	
			3	14.31	30.88	49.43	26.75	64.88	67.57	12.46	30.88	55.98	29.57	56.47	67.57	
			4	16.22	58.66	65.65	34.63	50.57	77.96	14.12	58.66	70.10	35.43	44.02	77.96	
			5	32.76	87.24	98.41	52.14	34.35	87.07	28.51	87.24	98.62	50.41	29.90	87.07	
			6	1.59	83.54	100.00	52.64	1.59	83.54	1.38	83.54	100.00	50.87	1.38	83.54	
			Dust	0.45	43.08											
4	screened	5	1	8.23	15.05	8.67	16.45	100.00	57.07	21.87	31.31	21.87	31.31	100.00	54.45	
			2	10.35	20.13	19.03	18.45	91.33	60.92	8.86	20.13	30.73	28.09	78.13	60.92	
			3	14.34	20.82	33.36	19.47	80.97	66.14	12.26	20.82	42.99	26.02	69.27	66.14	
			4	11.68	49.99	45.04	27.38	66.64	75.89	9.99	49.99	52.99	30.54	57.01	75.89	
			5	42.48	79.60	87.52	52.73	54.96	81.39	36.34	79.60	89.33	50.50	47.01	81.39	
			6	12.48	87.50	100.00	57.07	12.48	87.50	10.67	87.50	100.00	54.45	10.67	87.50	
			Dust	0.44	42.45											
5	screened	5	1	11.71	20.71	12.20	21.61	100.00	57.71	26.07	.	26.07	.	100.00	46.37	
			2	16.29	21.95	28.48	21.80	87.80	62.73	13.71	21.95	39.78	7.57	73.93	62.73	
			3	17.05	34.40	45.54	26.52	71.52	72.01	14.36	34.40	54.14	14.68	60.22	72.01	
			4	18.32	75.37	63.86	40.54	54.46	83.79	15.43	75.37	69.57	28.14	45.86	83.79	
			5	28.25	87.58	92.11	54.97	36.14	88.06	23.79	87.58	93.36	43.29	30.43	88.06	
			6	7.89	89.77	100.00	57.71	7.89	89.77	6.64	89.77	100.00	46.37	6.64	89.77	
			Dust	0.49	43.13											
6	screened	5	1	8.33	12.07	8.95	14.01	100.00	58.53	21.84	30.17	21.84	30.17	100.00	55.75	
			2	9.16	16.87	18.11	15.46	91.05	62.90	7.86	16.87	29.70	26.65	78.16	62.90	
			3	13.32	21.98	31.44	18.22	81.89	68.05	11.44	21.98	41.14	25.35	70.30	68.05	
			4	18.32	53.96	49.76	31.38	68.56	77.01	15.73	53.96	56.87	33.26	58.86	77.01	
			5	38.58	84.12	88.34	54.42	50.24	85.41	33.12	84.12	89.99	51.98	43.13	85.41	
			6	11.66	89.67	100.00	58.53	11.66	89.67	10.01	89.67	100.00	55.75	10.01	89.67	
			Dust	0.62	39.89											

TECO Coal Corporation
Elkhorn No. 2 Mine Coal - Round 1 Tests
Alma Seam

	Feed			Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
Test No.	Condition	Rate (tph)	Split	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Remarks
7	screened	8.6	1	16.44	25.81	16.96	26.16	100.00	55.94	30.26	32.93	30.26	32.93	100.00	53.22	
			2	19.46	23.95	36.42	24.98	83.04	62.02	16.35	23.95	46.60	29.78	69.74	62.02	
			3	14.06	33.32	50.48	27.30	63.58	73.68	11.81	33.32	58.41	30.49	53.40	73.68	
			4	14.71	78.18	65.18	38.78	49.52	85.13	12.35	78.18	70.76	38.82	41.59	85.13	
			5	30.06	87.81	95.24	54.25	34.82	88.07	25.25	87.81	96.00	51.70	29.24	88.07	
			6	4.76	89.71	100.00	55.94	4.76	89.71	4.00	89.71	100.00	53.22	4.00	89.71	
			Dust	0.52	37.09											
8	screened	12.6	1	23.08	43.30	23.56	43.24	100.00	60.49	34.00	41.52	34.00	41.52	100.00	57.55	
			2	23.21	31.21	46.77	37.27	76.44	65.80	20.04	31.21	54.03	37.70	66.00	65.80	
			3	20.19	71.46	66.96	47.58	53.23	80.88	17.44	71.46	71.47	45.93	45.97	80.88	
			4	11.15	83.23	78.10	52.67	33.04	86.64	9.62	83.23	81.09	50.36	28.53	86.64	
			5	18.75	88.70	96.85	59.65	21.90	88.38	16.19	88.70	97.28	56.74	18.91	88.38	
			6	3.15	86.44	100.00	60.49	3.15	86.44	2.72	86.44	100.00	57.55	2.72	86.44	
			Dust	0.48	40.70											
8(a)	screened	12.6	1	23.44	23.48	25.05	24.26	100.00	50.81	34.43	29.60	34.43	29.60	100.00	49.32	reject gate open
			2	24.02	23.96	49.07	24.11	74.95	59.68	21.01	23.96	55.44	27.46	65.57	59.68	
			3	12.88	55.49	61.95	30.64	50.93	76.53	11.27	55.49	66.71	32.19	44.56	76.53	
			4	8.97	75.27	70.92	36.28	38.05	83.65	7.85	75.27	74.56	36.73	33.29	83.65	
			5	14.61	82.84	85.53	44.24	29.08	86.23	12.78	82.84	87.34	43.48	25.44	86.23	
			6	14.47	89.65	100.00	50.81	14.47	89.65	12.66	89.65	100.00	49.32	12.66	89.65	
			Dust	1.62	35.59											
9	ROM	5	1	16.02	32.60	16.76	33.02	100.00	54.25							
			2	21.79	35.21	38.56	34.26	83.24	58.52							
			3	12.34	32.94	50.90	33.94	61.44	66.79							
			4	4.46	30.74	55.36	33.68	49.10	75.30							
			5	17.59	67.45	72.95	41.82	44.64	79.75							
			6	27.05	87.75	100.00	54.25	27.05	87.75							
			Dust	0.74	42.08											
10	ROM	5	1	27.76	36.06	28.50	36.13	100.00	53.42							
			2	18.51	34.00	47.00	35.29	71.50	60.31							
			3	9.67	35.23	56.68	35.28	53.00	69.49							
			4	5.26	36.84	61.93	35.42	43.32	77.14							
			5	18.72	75.42	80.65	44.70	38.07	82.71							
			6	19.35	89.76	100.00	53.42	19.35	89.76							
			Dust	0.74	38.77											

TECO Coal Corporation
Falcon Coal - Round 1 Tests
Hagy Seam

Test No.	Feed		Split	Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						Remarks
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
	Condition	Rate (tph)		Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	
11	screened	5	1	14.25	30.57	16.27	30.90	100.00	67.61	40.98	31.34	40.98	31.34	100.00	56.95	
			2	17.05	33.26	33.32	32.11	83.73	74.74	12.02	33.26	53.00	31.78	59.02	74.74	
			3	9.16	62.50	42.48	38.66	66.68	85.34	6.46	62.50	59.46	35.11	47.00	85.34	
			4	14.25	83.23	56.73	49.86	57.52	88.98	10.05	83.23	69.51	42.07	40.54	88.98	
			5	36.65	90.76	93.38	65.91	43.27	90.88	25.83	90.76	95.34	55.26	30.49	90.88	
			6	6.62	91.53	100.00	67.61	6.62	91.53	4.66	91.53	100.00	56.95	4.66	91.53	
			Dust	2.01	33.26											
12	screened	5	1	14.80	36.06	16.52	36.13	100.00	69.91	41.43	32.80	41.43	32.80	100.00	58.45	
			2	20.94	44.96	37.46	41.07	83.48	76.59	14.69	44.96	56.12	35.99	58.57	76.59	
			3	17.59	78.19	55.05	52.93	62.54	87.18	12.34	78.19	68.46	43.59	43.88	87.18	
			4	15.08	90.00	70.13	60.90	44.95	90.70	10.58	90.00	79.04	49.80	31.54	90.70	
			5	25.69	91.30	95.81	69.05	29.87	91.05	18.02	91.30	97.06	57.51	20.96	91.05	
			6	4.19	89.52	100.00	69.91	4.19	89.52	2.94	89.52	100.00	58.45	2.94	89.52	
			Dust	1.72	36.74											
13	screened	5	1	16.98	32.25	19.05	32.83	100.00	65.26	43.70	31.91	43.70	31.91	100.00	54.98	
			2	13.95	31.26	33.00	32.17	80.95	72.89	9.70	31.26	53.40	31.79	56.30	72.89	
			3	15.46	57.61	48.46	40.29	67.00	81.56	10.75	57.61	64.16	36.12	46.60	81.56	
			4	13.34	83.32	61.80	49.58	51.54	88.74	9.28	83.32	73.43	42.08	35.84	88.74	
			5	30.02	90.24	91.81	62.87	38.20	90.63	20.87	90.24	94.31	52.74	26.57	90.63	
			6	8.19	92.09	100.00	65.26	8.19	92.09	5.69	92.09	100.00	54.98	5.69	92.09	
			Dust	2.07	37.59											
14	screened	5	1	9.73	29.06	11.35	30.11	100.00	71.64	37.25	31.21	37.25	31.21	100.00	59.92	
			2	12.97	27.95	24.32	28.96	88.65	76.96	9.18	27.95	46.44	30.56	62.75	76.96	
			3	12.16	62.85	36.49	40.25	75.68	85.36	8.61	62.85	55.04	35.61	53.56	85.36	
			4	13.24	83.12	49.73	51.67	63.51	89.68	9.37	83.12	64.42	42.53	44.96	89.68	
			5	41.62	91.42	91.35	69.78	50.27	91.40	29.46	91.42	93.88	57.87	35.58	91.40	
			6	8.65	91.33	100.00	71.64	8.65	91.33	6.12	91.33	100.00	59.92	6.12	91.33	
			Dust	1.62	36.38											
15	screened	5	1	15.91	28.74	17.40	29.40	100.00	68.39	41.69	30.89	41.69	30.89	100.00	57.54	
			2	17.86	39.94	35.26	34.74	82.60	76.60	12.61	39.94	54.30	32.99	58.31	76.60	
			3	16.19	74.36	51.44	47.21	64.74	86.71	11.43	74.36	65.72	40.18	45.70	86.71	
			4	15.35	88.97	66.79	56.80	48.56	90.83	10.83	88.97	76.56	47.09	34.28	90.83	
			5	25.40	91.12	92.19	66.26	33.21	91.70	17.93	91.12	94.48	55.44	23.44	91.70	
			6	7.81	93.58	100.00	68.39	7.81	93.58	5.52	93.58	100.00	57.54	5.52	93.58	
			Dust	1.49	36.41											
16	screened	5	1	8.20	21.93	10.14	24.76	100.00	70.44	37.15	30.22	37.15	30.22	100.00	58.74	
			2	8.20	20.46	18.34	22.84	89.86	75.59	5.73	20.46	42.88	28.92	62.85	75.59	
			3	8.20	37.72	26.54	27.44	81.66	81.13	5.73	37.72	48.61	29.95	57.12	81.13	
			4	17.91	72.70	44.45	45.68	73.46	85.97	12.53	72.70	61.14	38.71	51.39	85.97	
			5	44.02	89.79	88.46	67.62	55.55	90.25	30.79	89.79	91.93	55.82	38.86	90.25	
			6	11.54	92.01	100.00	70.44	11.54	92.01	8.07	92.01	100.00	58.74	8.07	92.01	
			Dust	1.95	36.68											

TECO Coal Corporation
Falcon Coal - Round 1 Tests
Hagy Seam

Test No.	Feed		Split	Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						Remarks
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
	Condition	Rate (tph)		Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	
17	ROM	5	1	28.64	30.42	30.44	30.62	100.00	46.10							abnormally fine feed
			2	25.91	31.09	56.35	30.84	69.56	52.87							
			3	8.73	33.57	65.08	31.21	43.65	65.79							
			4	10.37	53.30	75.45	34.24	34.92	73.85							
			5	22.91	82.40	98.36	45.46	24.55	82.53							
			6	1.64	84.29	100.00	46.10	1.64	84.29							
			Dust	1.80	33.85											
18	ROM	5	1	28.47	31.14	30.36	31.17	100.00	42.47							abnormally fine feed
			2	27.70	29.05	58.06	30.16	69.64	47.40							
			3	10.97	15.54	69.03	27.84	41.94	59.52							
			4	9.04	57.01	78.07	31.22	30.97	75.10							
			5	20.58	82.30	98.65	41.87	21.93	82.55							
			6	1.35	86.42	100.00	42.47	1.35	86.42							
			Dust	1.89	31.72											
30	ROM	5	1	13.62	28.05	16.10	28.43	100.00	63.34							
			2	15.09	26.86	31.19	27.67	83.90	70.04							
			3	10.30	38.89	41.49	30.46	68.81	79.51							
			4	20.61	79.63	62.10	46.78	58.51	86.66							
			5	33.49	90.35	95.58	62.04	37.90	90.49							
			6	4.42	91.52	100.00	63.34	4.42	91.52							
			Dust	2.48	30.54											
31	ROM	5	1	13.80	23.83	17.22	25.23	100.00	54.77							
			2	14.16	24.78	31.38	25.03	82.78	60.92							
			3	9.08	23.78	40.45	24.75	68.62	68.37							
			4	20.70	53.21	61.15	34.38	59.55	75.17							
			5	33.77	86.09	94.92	52.78	38.85	86.87							
			6	5.08	92.05	100.00	54.77	5.08	92.05							
			Dust	3.42	30.88											
40	screened	9.7	1	17.41	49.32	18.40	48.76	100.00	68.69	43.67	36.53	43.67	36.53	100.00	47.94	reject gate open
			2	24.34	51.26	42.75	50.19	81.60	73.18	16.81	20.46	60.47	32.06	56.33	56.79	
			3	16.46	69.88	59.20	55.66	57.25	82.50	11.36	37.72	71.83	32.96	39.53	72.24	
			4	10.88	84.55	70.08	60.14	40.80	87.59	7.51	72.70	79.35	36.72	28.17	86.16	
			5	12.78	86.20	82.86	64.16	29.92	88.69	8.83	89.79	88.17	42.03	20.65	91.06	
			6	17.14	90.55	100.00	68.69	17.14	90.55	11.83	92.01	100.00	47.94	11.83	92.01	
			Dust	1.00	38.95											
41	screened	9.7	1	25.36	48.21	26.63	47.80	100.00	61.98	48.53	37.78	48.53	37.78	100.00	44.30	reject gate open
			2	25.02	47.93	51.65	47.86	73.37	67.13	17.55	31.09	66.08	36.00	51.47	50.45	
			3	18.26	65.08	69.91	52.36	48.35	77.06	12.81	33.57	78.89	35.61	33.92	60.47	
			4	6.76	74.52	76.67	54.31	30.09	84.33	4.74	53.30	83.63	36.61	21.11	76.80	
			5	8.45	80.93	85.12	56.96	23.33	87.17	5.93	82.40	89.56	39.64	16.37	83.61	
			6	14.88	90.72	100.00	61.98	14.88	90.72	10.44	84.29	100.00	44.30	10.44	84.29	
			Dust	1.27	39.52											

TECO Coal Corporation
Snapco Coal - Round 1 Tests
Splashdam Seam

Test No.	Feed		Split	Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						Remarks
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
	Condition	Rate (tph)		Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	
19	screened	5	1	32.79	45.96	33.17	45.89	100.00	55.40	56.57	41.64	56.57	41.64	100.00	49.66	
			2	28.52	41.70	61.68	43.95	66.83	60.12	18.53	41.70	75.10	41.65	43.43	60.12	
			3	9.27	44.79	70.95	44.06	38.32	73.82	6.02	44.79	81.12	41.89	24.90	73.82	
			4	6.06	70.04	77.01	46.11	29.05	83.08	3.94	70.04	85.06	43.19	18.88	83.08	
			5	20.67	86.27	97.68	54.61	22.99	86.52	13.43	86.27	98.49	49.07	14.94	86.52	
			6	2.32	88.70	100.00	55.40	2.32	88.70	1.51	88.70	100.00	49.66	1.51	88.70	
			Dust	0.37	39.76											
20	screened	5	1	37.79	54.85	38.25	54.59	100.00	63.39	46.95	49.92	46.95	49.92	100.00	59.96	
			2	30.58	58.05	68.83	56.12	61.75	68.84	26.27	58.05	73.22	52.83	53.05	68.84	
			3	7.21	56.37	76.04	56.15	31.17	79.44	6.19	56.37	79.42	53.11	26.78	79.44	
			4	7.60	77.11	83.64	58.05	23.96	86.38	6.53	77.11	85.94	54.93	20.58	86.38	
			5	15.00	91.23	98.64	63.10	16.36	90.69	12.89	91.23	98.83	59.66	14.06	90.69	
			6	1.36	84.68	100.00	63.39	1.36	84.68	1.17	84.68	100.00	59.96	1.17	84.68	
			Dust	0.45	32.60											
21	screened	5	1	30.58	57.16	30.83	56.96	100.00	63.32	41.53	50.28	41.53	50.28	100.00	59.56	
			2	25.73	45.05	56.56	51.54	69.17	66.16	21.75	45.05	63.28	48.48	58.47	66.16	
			3	9.86	57.09	66.42	52.36	43.44	78.66	8.33	57.09	71.61	49.48	36.72	78.66	
			4	8.86	79.25	75.27	55.53	33.58	84.99	7.49	79.25	79.10	52.30	28.39	84.99	
			5	23.22	86.85	98.50	62.91	24.73	87.05	19.63	86.85	98.73	59.17	20.90	87.05	
			6	1.50	90.08	100.00	63.32	1.50	90.08	1.27	90.08	100.00	59.56	1.27	90.08	
			Dust	0.25	32.67											
25	ROM	5	1	32.16	42.05	32.94	41.96	100.00	50.27							
			2	25.88	24.00	58.82	34.06	67.06	54.35							
			3	7.45	32.52	66.27	33.88	41.18	73.43							
			4	8.63	72.00	74.90	38.27	33.73	82.47							
			5	23.33	85.88	98.24	49.58	25.10	86.06							
			6	1.76	88.45	100.00	50.27	1.76	88.45							
			Dust	0.78	38.32											
26	ROM	5	1	33.78	36.86	34.21	36.85	100.00	51.47							
			2	24.71	31.14	58.93	34.46	65.79	59.07							
			3	6.93	41.50	65.86	35.20	41.07	75.87							
			4	7.47	69.17	73.33	38.66	34.14	82.85							
			5	22.94	86.26	96.27	50.00	26.67	86.68							
			6	3.73	89.26	100.00	51.47	3.73	89.26							
			Dust	0.43	35.82											

TECO Coal Corporation
Falcon Coal - Round 2 Tests
Hagy Seam

Test No.	Feed Condition	Feed Rate (tph)	Split	Product Stream Recovery Incremental Yield (%)	Product Stream Recovery Incremental Ash (%)	Product Stream Recovery Cumulative Yield (%)	Product Stream Recovery Cumulative Ash (%)	Reject Stream Recovery Cumulative Yield (%)	Reject Stream Recovery Cumulative Ash (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit Incremental Yield (%)	Incremental Ash (%)	Cumulative to Yield (%)	Cumulative to Ash (%)	Cumulative to Yield (%)	Cumulative to Ash (%)	Remarks
1	screened	5	1	23.86	23.07	24.59	23.83	100.00	56.87	50.03	26.72	50.03	26.72	100.00	47.17	
			2	21.85	30.23	46.44	26.84	75.41	67.64	14.48	30.23	64.51	27.50	49.97	67.64	
			3	13.36	61.40	59.80	34.56	53.56	82.91	8.85	61.40	73.36	31.60	35.49	82.91	
			4	12.33	85.37	72.13	43.25	40.20	90.06	8.17	85.37	81.53	36.98	26.64	90.06	
			5&6	27.87	92.13	100.00	56.87	27.87	92.13	18.47	92.13	100.00	47.17	18.47	92.13	
			Dust	0.73	48.65											
2	screened	5	1	23.19	30.89	23.94	31.44	100.00	55.30	40.19	29.67	40.19	29.67	100.00	49.49	
			2	21.20	24.34	45.13	28.10	76.06	62.81	16.67	24.34	56.86	28.10	59.81	62.81	
			3	13.47	49.93	58.60	33.12	54.87	77.68	10.59	49.93	67.45	31.53	43.14	77.68	
			4	15.46	80.13	74.06	42.93	41.40	86.71	12.16	80.13	79.60	38.95	32.55	86.71	
			5&6	25.94	90.63	100.00	55.30	25.94	90.63	20.40	90.63	100.00	49.49	20.40	90.63	
			Dust	0.74	48.65											
3	screened	5	1	28.54	30.05	29.29	30.53	100.00	54.91	44.40	29.37	44.40	29.37	100.00	49.19	
			2	18.94	25.98	48.23	28.74	70.71	65.01	14.89	25.98	59.29	28.52	55.60	65.01	
			3	12.63	54.76	60.86	34.14	51.77	79.29	9.93	54.76	69.22	32.28	40.71	79.29	
			4	12.37	81.67	73.23	42.17	39.14	87.21	9.73	81.67	78.95	38.37	30.78	87.21	
			5&6	26.77	89.77	100.00	54.91	26.77	89.77	21.05	89.77	100.00	49.19	21.05	89.77	
			Dust	0.75	48.65											
4	screened	5	1	25.27	24.41	26.06	25.15	100.00	52.88	41.86	26.66	41.86	26.66	100.00	47.59	
			2	19.95	25.67	46.01	25.37	73.94	62.65	15.69	25.67	57.54	26.39	58.14	62.65	
			3	17.29	52.12	63.30	32.68	53.99	76.31	13.59	52.12	71.14	31.31	42.46	76.31	
			4	11.44	82.03	74.73	40.23	36.70	87.71	8.99	82.03	80.13	37.00	28.86	87.71	
			5&6	25.27	90.28	100.00	52.88	25.27	90.28	19.87	90.28	100.00	47.59	19.87	90.28	
			Dust	0.79	48.65											
5	screened	5	1	22.92	17.68	23.81	18.84	100.00	52.76	41.22	23.98	41.22	23.98	100.00	47.13	
			2	17.86	18.97	41.66	18.89	76.19	63.36	13.78	18.97	54.99	22.72	58.78	63.36	
			3	15.18	42.17	56.84	25.11	58.34	76.95	11.71	42.17	66.70	26.14	45.01	76.95	
			4	13.39	84.33	70.24	36.40	43.16	89.18	10.33	84.33	77.04	33.94	33.30	89.18	
			5&6	29.76	91.36	100.00	52.76	29.76	91.36	22.96	91.36	100.00	47.13	22.96	91.36	
			Dust	0.89	48.65											
6	screened	5	1	22.41	20.24	23.27	21.28	100.00	57.88	38.71	24.83	38.71	24.83	100.00	51.89	
			2	15.81	22.53	39.08	21.79	76.73	68.98	12.62	22.53	51.34	24.27	61.29	68.98	
			3	13.79	53.48	52.87	30.06	60.92	81.02	11.02	53.48	62.36	29.43	48.66	81.02	
			4	18.10	86.21	70.98	44.38	47.13	89.09	14.46	86.21	76.82	40.12	37.64	89.09	
			5&6	29.02	90.88	100.00	57.88	29.02	90.88	23.18	90.88	100.00	51.89	23.18	90.88	
			Dust	0.86	48.65											

TECO Coal Corporation
Falcon Coal - Round 2 Tests
Hagy Seam

Test No.	Feed Condition	Feed Rate (tph)	Split	Product Stream Recovery Incremental Yield (%)	Product Stream Recovery Incremental Ash (%)	Product Stream Recovery Cumulative Yield (%)	Product Stream Recovery Cumulative Ash (%)	Reject Stream Recovery Cumulative Yield (%)	Reject Stream Recovery Cumulative Ash (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit Incremental Yield (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit Incremental Ash (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit Cumulative to Yield (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit Cumulative to Ash (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit Cumulative to Yield (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit Cumulative to Ash (%)	Remarks
7	screened	5	1	19.03	14.92	19.94	16.44	100.00	58.73	36.80	23.12	36.80	23.12	100.00	52.28	
			2	15.41	20.79	35.34	18.34	80.06	69.26	12.16	20.79	48.97	22.54	63.20	69.26	
			3	12.69	51.13	48.03	27.00	64.66	80.81	10.02	51.13	58.98	27.40	51.03	80.81	
			4	16.62	80.27	64.65	40.69	51.97	88.05	13.12	80.27	72.10	37.02	41.02	88.05	
			5&6	35.35	91.71	100.00	58.73	35.35	91.71	27.90	91.71	100.00	52.28	27.90	91.71	
			Dust	0.90	48.65											

TECO Coal Corporation
Third Fork Coarse Reject Area - Round 2 Tests
Coarse Refuse

Test No.	Feed		Split	Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						Remarks
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
	Condition	Rate (tph)		Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	
8	screened	5	1	19.45	38.20	21.07	37.95	100.00	53.49	43.63	38.36	43.63	38.36	100.00	49.23	
			2	24.92	39.28	46.00	38.67	78.93	57.64	17.80	39.28	61.43	38.63	56.37	57.64	
			3	17.37	49.77	63.37	41.71	54.00	66.12	12.41	49.77	73.84	40.50	38.57	66.12	
			4	11.90	58.67	75.26	44.39	36.63	73.88	8.50	58.67	82.33	42.37	26.16	73.88	
			5	20.39	79.20	95.66	51.81	24.74	81.19	14.56	79.20	96.90	47.91	17.67	81.19	
			6	4.34	90.55	100.00	53.49	4.34	90.55	3.10	90.55	100.00	49.23	3.10	90.55	
			Dust	1.62	34.98											
9	screened	5	1	19.26	37.78	21.06	37.15	100.00	54.41	42.83	38.07	42.83	38.07	100.00	50.04	
			2	21.78	41.54	42.83	39.38	78.94	59.01	15.77	41.54	58.60	39.00	57.17	59.01	
			3	16.12	49.04	58.96	42.02	57.17	65.67	11.68	49.04	70.28	40.67	41.40	65.67	
			4	13.40	56.12	72.36	44.64	41.04	72.20	9.70	56.12	79.98	42.55	29.72	72.20	
			5	23.87	78.88	96.23	53.13	27.64	79.99	17.29	78.88	97.27	49.00	20.02	79.99	
			6	3.77	87.01	100.00	54.41	3.77	87.01	2.73	87.01	100.00	50.04	2.73	87.01	
			Dust	1.79	30.29											
10	screened	5	1	20.99	38.44	22.47	37.80	100.00	51.21	43.02	38.28	43.02	38.28	100.00	47.86	reject gate open
			2	24.87	39.66	47.34	38.78	77.53	55.10	18.28	39.66	61.30	38.69	56.98	55.10	
			3	14.38	47.69	61.72	40.85	52.66	62.39	10.57	47.69	71.87	40.02	38.70	62.39	
			4	6.41	49.04	68.13	41.62	38.28	67.92	4.71	49.04	76.58	40.57	28.13	67.92	
			5	9.91	57.35	78.04	43.62	31.87	71.71	7.28	57.35	83.86	42.03	23.42	71.71	
			6	21.96	78.19	100.00	51.21	21.96	78.19	16.14	78.19	100.00	47.86	16.14	78.19	
			Dust	1.49	28.72											
11	screened	10	1	30.88	39.00	31.59	38.77	100.00	49.15	52.76	38.66	52.76	38.66	100.00	45.88	reject gate open
			2	28.24	39.37	59.83	39.06	68.41	53.93	19.50	39.37	72.26	38.85	47.24	53.93	
			3	13.18	44.62	73.01	40.06	40.17	64.17	9.10	44.62	81.36	39.50	27.74	64.17	
			4	5.65	56.68	78.66	41.26	26.99	73.72	3.90	56.68	85.26	40.28	18.64	73.72	
			5	8.03	70.83	86.70	44.00	21.34	78.23	5.55	70.83	90.81	42.15	14.74	78.23	
			6	13.30	82.70	100.00	49.15	13.30	82.70	9.19	82.70	100.00	45.88	9.19	82.70	
			Dust	0.72	28.95											
12	screened	5	1	12.59	35.31	14.44	34.07	100.00	53.98	38.86	37.38	38.86	37.38	100.00	49.58	
			2	18.35	35.71	32.79	34.99	85.56	57.34	13.11	35.71	51.97	36.96	61.14	57.34	
			3	12.59	42.53	45.38	37.08	67.21	63.24	9.00	42.53	60.97	37.78	48.03	63.24	
			4	15.15	49.59	60.52	40.21	54.62	68.01	10.83	49.59	71.79	39.56	39.03	68.01	
			5	30.94	71.50	91.46	50.79	39.48	75.08	22.11	71.50	93.90	47.08	28.21	75.08	
			6	8.54	88.08	100.00	53.98	8.54	88.08	6.10	88.08	100.00	49.58	6.10	88.08	
			Dust	1.85	25.59											
13	screened	5	1	12.05	35.07	14.68	33.74	100.00	51.59	39.33	37.30	39.33	37.30	100.00	47.83	reject gate open
			2	16.07	36.37	30.75	35.12	85.32	54.66	11.43	36.37	50.76	37.09	60.67	54.66	
			3	11.82	38.94	42.57	36.18	69.25	58.91	8.40	38.94	59.16	37.35	49.24	58.91	
			4	8.04	40.84	50.60	36.92	57.43	63.02	5.71	40.84	64.88	37.66	40.84	63.02	
			5	14.65	48.18	65.26	39.45	49.40	66.62	10.42	48.18	75.30	39.12	35.12	66.62	
			6	34.74	74.40	100.00	51.59	34.74	74.40	24.70	74.40	100.00	47.83	24.70	74.40	
			Dust	2.62	27.65											

TECO Coal Corporation
Third Fork Coarse Reject Area - Round 2 Tests
Coarse Refuse

	Feed			Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
Test No.	Condition	Rate (tph)	Split	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Remarks
14	screened	5	1	12.33	35.14	13.66	34.42	100.00	53.27	39.15	37.56	39.15	37.56	100.00	48.93	
			2	19.69	38.03	33.35	36.55	86.34	56.25	13.87	38.03	53.03	37.68	60.85	56.25	
			3	15.42	41.78	48.77	38.21	66.65	61.63	10.87	41.78	63.89	38.38	46.97	61.63	
			4	12.81	49.67	61.57	40.59	51.23	67.60	9.03	49.67	72.92	39.78	36.11	67.60	
			5	31.07	69.75	92.65	50.37	38.43	73.58	21.90	69.75	94.82	46.70	27.08	73.58	
			6	7.35	89.76	100.00	53.27	7.35	89.76	5.18	89.76	100.00	48.93	5.18	89.76	
			Dust	1.33	27.78											
15	screened	10	1	30.00	41.47	31.03	41.06	100.00	52.57	53.86	39.54	53.86	39.54	100.00	47.94	reject gate open
			2	28.72	44.60	59.75	42.76	68.97	57.75	19.21	44.60	73.07	40.87	46.14	57.75	
			3	12.81	48.37	72.56	43.75	40.25	67.13	8.57	48.37	81.64	41.66	26.93	67.13	
			4	3.63	56.19	76.19	44.35	27.44	75.89	2.43	56.19	84.07	42.08	18.36	75.89	
			5	7.47	68.06	83.67	46.46	23.81	78.89	5.00	68.06	89.07	43.53	15.93	78.89	
			6	16.33	83.84	100.00	52.57	16.33	83.84	10.93	83.84	100.00	47.94	10.93	83.84	
			Dust	1.03	29.12											

TECO Coal Corporation

Turkey Pen Coarse Reject Area - Round 2 Tests

Coarse Refuse

Test No.	Feed		Split	Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						Remarks
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
	Condition	Rate (tph)		Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	
16	screened	5	1	14.77	50.01	15.82	50.20	100.00	62.83	42.47	63.98	42.47	63.98	100.00	64.69	
			2	16.98	51.41	32.80	50.83	84.18	65.21	11.61	51.41	54.08	61.28	57.53	65.21	
			3	19.45	50.79	52.25	50.82	67.20	68.69	13.29	50.79	67.37	59.21	45.92	68.69	
			4	12.31	61.08	64.55	52.77	47.75	75.98	8.41	61.08	75.78	59.42	32.63	75.98	
			5	30.03	79.87	94.58	61.38	35.45	81.16	20.52	79.87	96.30	63.78	24.22	81.16	
			6	5.42	88.30	100.00	62.83	5.42	88.30	3.70	88.30	100.00	64.69	3.70	88.30	
			Dust	1.05	52.96											
17	screened	5	1	13.69	49.45	14.79	50.07	100.00	63.26	42.86	64.37	42.86	64.37	100.00	65.05	
			2	22.81	50.10	37.60	50.09	85.21	65.55	15.30	50.10	58.15	60.62	57.14	65.55	
			3	21.02	55.03	58.62	51.86	62.40	71.20	14.09	55.03	72.25	59.53	41.85	71.20	
			4	11.24	68.63	69.86	54.56	41.38	79.41	7.54	68.63	79.79	60.39	27.75	79.41	
			5	25.25	82.63	95.11	62.01	30.14	83.43	16.94	82.63	96.72	64.28	20.21	83.43	
			6	4.89	87.56	100.00	63.26	4.89	87.56	3.28	87.56	100.00	65.05	3.28	87.56	
			Dust	1.10	57.78											
18	screened	5	1	15.02	51.32	15.84	51.69	100.00	63.07	47.01	65.07	47.01	65.07	100.00	65.15	reject gate open
			2	24.76	50.70	40.60	51.09	84.16	65.21	15.59	50.70	62.60	61.49	52.99	65.21	
			3	21.70	60.40	62.30	54.33	59.40	71.26	13.66	60.40	76.26	61.30	37.40	71.26	
			4	6.12	60.93	68.42	54.92	37.70	77.50	3.85	60.93	80.12	61.28	23.74	77.50	
			5	10.99	74.54	79.41	57.64	31.58	80.72	6.92	74.54	87.04	62.34	19.88	80.72	
			6	20.59	84.01	100.00	63.07	20.59	84.01	12.96	84.01	100.00	65.15	12.96	84.01	
			Dust	0.82	58.38											
19	screened	5	1	12.87	48.27	13.75	48.37	100.00	62.74	44.31	64.61	44.31	64.61	100.00	64.84	
			2	19.95	52.20	33.71	50.64	86.25	65.03	12.88	52.20	57.19	61.82	55.69	65.03	
			3	18.67	54.00	52.37	51.84	66.29	68.88	12.05	54.00	69.25	60.46	42.81	68.88	
			4	10.30	61.13	62.67	53.37	47.63	74.72	6.65	61.13	75.89	60.51	30.75	74.72	
			5	30.25	77.01	92.92	61.06	37.33	78.47	19.53	77.01	95.43	63.89	24.11	78.47	
			6	7.08	84.70	100.00	62.74	7.08	84.70	4.57	84.70	100.00	64.84	4.57	84.70	
			Dust	0.88	49.96											
20	screened	5	1	10.85	49.85	11.74	49.73	100.00	61.30	43.22	65.37	43.22	65.37	100.00	63.93	
			2	17.26	47.69	29.00	48.51	88.26	62.84	11.10	47.69	54.33	61.75	56.78	62.84	
			3	16.55	49.09	45.55	48.72	71.00	66.53	10.65	49.09	64.97	59.68	45.67	66.53	
			4	9.96	55.01	55.52	49.85	54.45	71.82	6.41	55.01	71.38	59.26	35.03	71.82	
			5	26.69	74.64	82.21	57.90	44.48	75.59	17.17	74.64	88.55	62.24	28.62	75.59	
			6	17.79	77.02	100.00	61.30	17.79	77.02	11.45	77.02	100.00	63.93	11.45	77.02	
			Dust	0.89	48.24											
21	screened	5	1	8.95	48.36	10.01	48.24	100.00	63.05	41.45	65.47	41.45	65.47	100.00	65.02	reject gate open
			2	17.01	53.02	27.02	51.25	89.99	64.70	11.07	53.02	52.52	62.85	58.55	64.70	
			3	17.91	49.53	44.93	50.56	72.98	67.42	11.65	49.53	64.17	60.43	47.48	67.42	
			4	6.49	54.36	51.42	51.04	55.07	73.24	4.22	54.36	68.39	60.05	35.83	73.24	
			5	15.45	63.29	66.87	53.87	48.58	75.77	10.05	63.29	78.44	60.47	31.61	75.77	
			6	33.13	81.59	100.00	63.05	33.13	81.59	21.56	81.59	100.00	65.02	21.56	81.59	
			Dust	1.05	47.24											

TECO Coal Corporation
Turkey Pen Coarse Reject Area - Round 2 Tests
Coarse Refuse

Test No.	Feed		Split	Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						Remarks
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
	Condition	Rate (tph)		Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	
22	screened	10	2	29.93	46.59	30.89	46.56	100.00	62.67	58.37	61.95	58.37	61.95	100.00	65.11	reject gate open
			3	24.60	57.49	55.49	51.41	69.11	69.87	14.62	57.49	72.99	61.06	41.63	69.54	
			4	7.68	58.56	63.17	52.28	44.51	76.72	4.56	58.56	77.55	60.91	27.01	76.06	
			5	15.83	72.52	79.00	56.33	36.83	80.50	9.40	72.52	86.96	62.17	22.45	79.62	
			6	21.00	86.52	100.00	62.67	21.00	86.52	12.48	86.52	99.43	65.22	13.04	84.74	
			Dust	0.96	45.68					0.57	45.68	100.00	65.11	0.57	45.68	
23	screened	10	1	18.24	47.86	18.92	47.51	100.00	61.03	44.90	62.62	44.90	62.62	100.00	63.48	reject gate open
			2	29.36	50.42	48.28	49.28	81.08	64.19	19.95	50.42	64.86	58.86	55.10	64.19	
			3	19.69	65.32	67.97	53.92	51.72	72.00	13.38	65.32	78.23	59.97	35.14	72.00	
			4	4.34	56.84	72.31	54.10	32.03	76.11	2.95	56.84	81.18	59.85	21.77	76.11	
			5	9.68	71.09	81.98	56.10	27.69	79.13	6.58	71.09	87.76	60.70	18.82	79.13	
			6	18.02	83.45	100.00	61.03	18.02	83.45	12.24	83.45	100.00	63.48	12.24	83.45	
			Dust	0.68	37.97											

James River Coal Company
Highwall Miner Coal

Test No.	Feed		Split	Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						Remarks
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
	Condition	Rate (tph)		Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	
1	screened	5	1	25.80	18.49	27.24	19.93	100.00	30.55	42.79	28.07	42.79	28.07	100.00	31.76	
			2	32.49	19.23	59.73	19.55	72.76	34.53	25.54	19.23	68.33	24.77	57.21	34.53	
			3	15.94	25.55	75.67	20.81	40.27	46.87	12.54	25.55	80.87	24.89	31.67	46.87	
			4	7.61	39.13	83.28	22.49	24.33	60.84	5.99	39.13	86.86	25.87	19.13	60.84	
			5	15.29	69.82	98.58	29.83	16.72	70.72	12.03	69.82	98.88	31.21	13.14	70.72	
			6	1.42	80.42	100.00	30.55	1.42	80.42	1.12	80.42	100.00	31.76	1.12	80.42	
			Dust	1.44	45.67											
2	screened	5	1	27.99	17.09	29.14	18.08	100.00	30.87	45.71	27.36	45.71	27.36	100.00	32.12	
			2	32.83	18.27	61.97	18.18	70.86	36.13	25.15	18.27	70.86	24.14	54.29	36.13	
			3	15.74	27.93	77.70	20.15	38.03	51.54	12.06	27.93	82.92	24.69	29.14	51.54	
			4	6.63	58.05	84.33	23.13	22.30	68.21	5.08	58.05	88.00	26.61	17.08	68.21	
			5	14.22	71.73	98.55	30.14	15.67	72.50	10.89	71.73	98.89	31.58	12.00	72.50	
			6	1.45	80.07	100.00	30.87	1.45	80.07	1.11	80.07	100.00	32.12	1.11	80.07	
			Dust	1.15	42.17											
3	screened	5	1	26.26	16.69	27.22	17.54	100.00	31.62	40.79	26.08	40.79	26.08	100.00	32.48	
			2	38.72	25.69	65.94	22.32	72.78	36.89	31.50	25.69	72.29	25.91	59.21	36.89	
			3	13.89	30.26	79.83	23.70	34.06	49.62	11.30	30.26	83.59	26.50	27.71	49.62	
			4	5.38	50.28	85.21	25.38	20.17	62.94	4.38	50.28	87.96	27.68	16.41	62.94	
			5	13.47	66.62	98.68	31.01	14.79	67.54	10.96	66.62	98.93	32.00	12.04	67.54	
			6	1.32	76.95	100.00	31.62	1.32	76.95	1.07	76.95	100.00	32.48	1.07	76.95	
			Dust	0.96	40.68											
4	screened	5	1	23.91	17.89	24.68	18.50	100.00	32.25	40.71	27.77	40.71	27.77	100.00	33.10	
			2	28.06	16.56	52.74	17.47	75.32	36.76	22.09	16.56	62.80	23.83	59.29	36.76	
			3	15.73	25.83	68.48	19.39	47.26	48.75	12.39	25.83	75.18	24.16	37.20	48.75	
			4	8.88	36.17	77.36	21.32	31.52	60.18	6.99	36.17	82.18	25.18	24.82	60.18	
			5	19.46	68.13	96.81	30.72	22.64	69.60	15.32	68.13	97.49	31.93	17.82	69.60	
			6	3.19	78.59	100.00	32.25	3.19	78.59	2.51	78.59	100.00	33.10	2.51	78.59	
			Dust	0.77	37.46											
5	screened	5	1	27.19	18.66	27.98	19.18	100.00	32.68	44.07	27.82	44.07	27.82	100.00	33.48	
			2	29.97	20.19	57.95	19.70	72.02	37.93	23.28	20.19	67.34	25.18	55.93	37.93	
			3	18.41	32.87	76.36	22.88	42.05	50.58	14.30	32.87	81.64	26.53	32.66	50.58	
			4	7.26	50.10	83.62	25.24	23.64	64.37	5.64	50.10	87.28	28.05	18.36	64.37	
			5	15.24	69.95	98.87	32.13	16.38	70.69	11.84	69.95	99.12	33.06	12.72	70.69	
			6	1.13	80.67	100.00	32.68	1.13	80.67	0.88	80.67	100.00	33.48	0.88	80.67	
			Dust	0.79	36.86											
28	ROM	5	1	32.87	22.45	33.79	22.98	100.00	32.30							
			2	29.00	22.13	62.79	22.59	66.21	37.06							
			3	11.29	25.31	74.08	23.00	37.21	48.69							
			4	8.34	39.51	82.42	24.67	25.92	58.87							
			5	16.16	66.75	98.57	31.57	17.58	68.06							
			6	1.43	82.85	100.00	32.30	1.43	82.85							
			Dust	0.92	41.93											

James River Coal Company
No. 8 Bottom Coal

Test No.	Feed		Split	Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						Remarks
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
	Condition	Rate (tph)		Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	
6	screened	5	1	12.52	40.34	13.76	40.98	100.00	46.41	48.79	41.15	48.79	41.15	100.00	44.29	
			2	27.32	38.39	41.08	39.26	86.24	47.28	16.22	38.39	65.01	40.46	51.21	47.28	
			3	25.23	41.08	66.31	39.95	58.92	51.40	14.98	41.08	80.00	40.57	34.99	51.40	
			4	8.85	50.59	75.16	41.20	33.69	59.13	5.25	50.59	85.25	41.19	20.00	59.13	
			5	20.87	60.22	96.03	45.34	24.84	62.17	12.39	60.22	97.64	43.61	14.75	62.17	
			6	3.97	72.41	100.00	46.41	3.97	72.41	2.36	72.41	100.00	44.29	2.36	72.41	
			Dust	1.23	47.45											
7	screened	5	1	10.35	38.86	11.45	39.71	100.00	47.53	48.72	40.98	48.72	40.98	100.00	44.86	
			2	27.07	40.82	38.52	40.49	88.55	48.54	15.68	40.82	64.40	40.94	51.28	48.54	
			3	32.25	45.64	70.77	42.84	61.48	51.95	18.68	45.64	83.07	42.00	35.60	51.95	
			4	10.55	50.74	81.32	43.86	29.23	58.90	6.11	50.74	89.18	42.60	16.93	58.90	
			5	15.53	61.27	96.85	46.65	18.68	63.51	8.99	61.27	98.17	44.31	10.82	63.51	
			6	3.15	74.57	100.00	47.53	3.15	74.57	1.83	74.57	100.00	44.86	1.83	74.57	
			Dust	1.09	47.76											
8	screened	5	1	9.14	36.99	10.24	38.15	100.00	47.23	47.40	40.80	47.40	40.80	100.00	44.73	
			2	25.84	40.81	36.07	40.06	89.76	48.27	15.14	40.81	62.54	40.80	52.60	48.27	
			3	25.04	44.53	61.11	41.89	63.93	51.28	14.67	44.53	77.22	41.51	37.46	51.28	
			4	11.53	47.07	72.64	42.71	38.89	55.63	6.75	47.07	83.97	41.96	22.78	55.63	
			5	23.97	58.05	96.61	46.52	27.36	59.24	14.04	58.05	98.01	44.26	16.03	59.24	
			6	3.39	67.65	100.00	47.23	3.39	67.65	1.99	67.65	100.00	44.73	1.99	67.65	
			Dust	1.09	47.89											
9	screened	5	1	12.26	38.31	13.36	38.94	100.00	47.21	46.42	40.78	46.42	40.78	100.00	44.91	
			2	27.71	39.88	41.06	39.57	86.64	48.49	17.14	39.88	63.55	40.54	53.58	48.49	
			3	22.91	43.66	63.98	41.04	58.94	52.53	14.17	43.66	77.72	41.11	36.45	52.53	
			4	9.85	50.00	73.82	42.23	36.02	58.18	6.09	50.00	83.81	41.75	22.28	58.18	
			5	22.04	58.94	95.87	46.07	26.18	61.25	13.63	58.94	97.44	44.16	16.19	61.25	
			6	4.13	73.58	100.00	47.21	4.13	73.58	2.56	73.58	100.00	44.91	2.56	73.58	
			Dust	1.09	46.02											
10	screened	5	1	13.45	41.25	14.49	41.69	100.00	47.63	48.89	41.27	48.89	41.27	100.00	45.04	
			2	26.90	41.93	41.40	41.85	85.51	48.64	16.08	41.93	64.97	41.43	51.11	48.64	
			3	30.51	44.79	71.91	43.10	58.60	51.72	18.24	44.79	83.21	42.17	35.03	51.72	
			4	8.98	52.35	80.89	44.12	28.09	59.24	5.37	52.35	88.58	42.79	16.79	59.24	
			5	16.81	60.79	97.70	46.99	19.11	62.48	10.05	60.79	98.62	44.62	11.42	62.48	
			6	2.30	74.81	100.00	47.63	2.30	74.81	1.38	74.81	100.00	45.04	1.38	74.81	
			Dust	1.04	47.38											
30	ROM	5	1	17.97	41.30	19.29	41.40	100.00	47.38							
			2	34.48	40.04	53.77	40.53	80.71	48.81							
			3	16.76	44.35	70.53	41.44	46.23	55.35							
			4	11.81	55.62	82.34	43.47	29.47	61.60							
			5	13.58	62.31	95.92	46.14	17.66	65.60							
			6	4.08	76.53	100.00	47.38	4.08	76.53							
			Dust	1.31	42.73											

James River Coal Company
McCoy Elkhorn Coal

Test No.	Feed Condition	Feed Rate (tph)	Split	Product Stream Recovery Incremental Yield (%)	Product Stream Recovery Incremental Ash (%)	Product Stream Recovery Cumulative Yield (%)	Product Stream Recovery Cumulative Ash (%)	Reject Stream Recovery Cumulative Yield (%)	Reject Stream Recovery Cumulative Ash (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit Incremental Yield (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit Incremental Ash (%)	Cumulative to Product Yield (%)	Cumulative to Product Ash (%)	Cumulative to Reject Yield (%)	Cumulative to Reject Ash (%)	Remarks
11	screened	5	1	22.61	21.45	23.93	22.72	100.00	49.10	51.23	37.16	51.23	37.16	100.00	47.03	
			2	25.49	26.23	49.42	24.53	76.07	57.40	16.35	26.23	67.57	34.52	48.77	57.40	
			3	13.95	44.17	63.37	28.85	50.58	73.11	8.94	44.17	76.52	35.65	32.43	73.11	
			4	7.19	73.33	70.56	33.39	36.63	84.13	4.61	73.33	81.13	37.79	23.48	84.13	
			5	25.49	86.34	96.05	47.44	29.44	86.76	16.35	86.34	97.47	45.93	18.87	86.76	
			6	3.95	89.51	100.00	49.10	3.95	89.51	2.53	89.51	100.00	47.03	2.53	89.51	
			Dust	1.32	44.46											
12	screened	5	1	26.36	23.05	27.48	23.83	100.00	46.77	52.55	36.66	52.55	36.66	100.00	45.58	
			2	31.82	25.82	59.30	24.90	72.52	55.46	20.82	25.82	73.37	33.59	47.45	55.46	
			3	17.27	67.66	76.57	34.54	40.70	78.63	11.30	67.66	84.67	38.14	26.63	78.63	
			4	7.83	83.57	84.40	39.09	23.43	86.71	5.12	83.57	89.79	40.73	15.33	86.71	
			5	14.55	88.55	98.94	46.36	15.60	88.29	9.52	88.55	99.31	45.31	10.21	88.29	
			6	1.06	84.73	100.00	46.77	1.06	84.73	0.69	84.73	100.00	45.58	0.69	84.73	
			Dust	1.11	42.31											
13	screened	5	1	19.76	16.99	20.81	18.27	100.00	46.05	48.88	36.45	48.88	36.45	100.00	45.09	
			2	25.83	18.47	46.64	18.38	79.19	53.34	16.68	18.47	65.56	31.88	51.12	53.34	
			3	13.17	38.25	59.81	22.76	53.36	70.23	8.50	38.25	74.06	32.61	34.44	70.23	
			4	9.42	69.15	69.23	29.07	40.19	80.71	6.08	69.15	80.14	35.38	25.94	80.71	
			5	25.33	83.92	94.55	43.76	30.77	84.24	16.35	83.92	96.49	43.61	19.86	84.24	
			6	5.45	85.75	100.00	46.05	5.45	85.75	3.51	85.75	100.00	45.09	3.51	85.75	
			Dust	1.05	42.37											
14	screened	5	1	20.81	17.36	22.17	18.80	100.00	46.60	48.84	36.02	48.84	36.02	100.00	45.49	
			2	24.60	18.40	46.77	18.59	77.83	54.52	16.17	18.40	65.01	31.64	51.16	54.52	
			3	12.34	35.07	59.10	22.03	53.23	71.21	8.11	35.07	73.12	32.02	34.99	71.21	
			4	7.97	66.57	67.07	27.32	40.90	82.12	5.24	66.57	78.35	34.33	26.88	82.12	
			5	26.78	85.69	93.85	43.98	32.93	85.88	17.60	85.69	95.95	43.75	21.65	85.88	
			6	6.15	86.69	100.00	46.60	6.15	86.69	4.05	86.69	100.00	45.49	4.05	86.69	
			Dust	1.36	40.93											
15	screened	5	1	26.93	17.98	28.02	18.86	100.00	41.36	54.90	35.51	54.90	35.51	100.00	42.10	
			2	30.24	20.33	58.26	19.62	71.98	50.11	18.95	20.33	73.85	31.62	45.10	50.11	
			3	16.46	50.81	74.72	26.49	41.74	71.70	10.31	50.81	84.16	33.97	26.15	71.70	
			4	7.52	80.77	82.24	31.46	25.28	85.30	4.71	80.77	88.88	36.45	15.84	85.30	
			5	14.96	87.17	97.20	40.03	17.76	87.21	9.37	87.17	98.25	41.29	11.12	87.21	
			6	2.80	87.45	100.00	41.36	2.80	87.45	1.75	87.45	100.00	42.10	1.75	87.45	
			Dust	1.08	40.70											
27	ROM	5	1	31.84	25.57	32.40	25.92	100.00	43.01							
			2	29.65	29.17	62.05	27.47	67.60	51.19							
			3	8.39	37.98	70.44	28.73	37.95	68.40							
			4	10.72	66.26	81.16	33.68	29.56	77.04							
			5	16.88	82.40	98.04	42.07	18.84	83.17							
			6	1.96	89.77	100.00	43.01	1.96	89.77							
			Dust	0.56	45.94											

James River Coal Company
Amburgy Coal

Test No.	Feed		Split	Product Stream Recovery				Reject Stream Recovery		Based on Total Feed to Screening and Dry Coal Cleaning Unit						Remarks
				Incremental		Cumulative		Cumulative		Incremental		Cumulative to Product		Cumulative to Reject		
	Condition	Rate (tph)		Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	Yield (%)	Ash (%)	
16	screened	5	1	16.51	36.79	16.74	36.82	100.00	56.40	20.33	38.22	20.33	38.22	100.00	55.84	
			2	24.03	29.90	40.77	32.74	83.26	60.33	22.99	29.90	43.32	33.80	79.67	60.33	
			3	15.63	43.66	56.40	35.77	59.23	72.68	14.96	43.66	58.28	36.33	56.68	72.68	
			4	10.93	70.22	67.33	41.36	43.60	83.08	10.46	70.22	68.74	41.49	41.72	83.08	
			5	27.68	86.84	95.01	54.61	32.67	87.38	26.49	86.84	95.23	54.10	31.26	87.38	
			6	4.99	90.40	100.00	56.40	4.99	90.40	4.77	90.40	100.00	55.84	4.77	90.40	
			Dust	0.23	39.24											
17	screened	5	1	20.08	37.82	20.33	37.83	100.00	56.19	28.02	39.75	28.02	39.75	100.00	54.96	
			2	23.06	30.22	43.39	33.78	79.67	60.88	20.84	30.22	48.85	35.69	71.98	60.88	
			3	23.68	56.40	67.07	41.77	56.61	73.37	21.40	56.40	70.25	41.99	51.15	73.37	
			4	12.12	80.23	79.19	47.66	32.93	85.57	10.95	80.23	81.20	47.15	29.75	85.57	
			5	17.76	89.34	96.95	55.29	20.81	88.69	16.05	89.34	97.25	54.11	18.80	88.69	
			6	3.05	84.89	100.00	56.19	3.05	84.89	2.75	84.89	100.00	54.96	2.75	84.89	
			Dust	0.25	38.44											
18	screened	5	1	15.50	15.44	15.72	15.77	100.00	52.57	24.18	27.25	24.18	27.25	100.00	51.65	
			2	19.38	19.61	35.09	17.89	84.28	59.43	17.43	19.61	41.61	24.05	75.82	59.43	
			3	15.26	35.93	50.35	23.36	64.91	71.32	13.73	35.93	55.34	27.00	58.39	71.32	
			4	12.09	68.53	62.45	32.10	49.65	82.20	10.88	68.53	66.22	33.82	44.66	82.20	
			5	31.81	85.73	94.25	50.20	37.55	86.60	28.61	85.73	94.83	49.48	33.78	86.60	
			6	5.75	91.40	100.00	52.57	5.75	91.40	5.17	91.40	100.00	51.65	5.17	91.40	
			Dust	0.21	39.46											
19	screened	5	1	17.50	34.84	17.95	35.02	100.00	56.28	22.64	37.14	22.64	37.14	100.00	55.55	
			2	20.44	25.69	38.40	30.05	82.05	60.93	19.28	25.69	41.92	31.87	77.36	60.93	
			3	11.91	41.15	50.30	32.68	61.60	72.63	11.23	41.15	53.14	33.83	58.08	72.63	
			4	11.46	60.58	61.77	37.86	49.70	80.17	10.81	60.58	63.95	38.35	46.86	80.17	
			5	31.22	85.32	92.99	53.79	38.23	86.05	29.44	85.32	93.39	53.16	36.05	86.05	
			6	7.01	89.29	100.00	56.28	7.01	89.29	6.61	89.29	100.00	55.55	6.61	89.29	
			Dust	0.45	41.86											
20	screened	5	1	15.81	25.49	16.09	25.76	100.00	52.61	21.84	31.30	21.84	31.30	100.00	51.98	
			2	24.83	25.99	40.92	25.90	83.91	57.75	23.13	25.99	44.97	28.57	78.16	57.75	
			3	20.44	48.01	61.36	33.27	59.08	71.10	19.04	48.01	64.01	34.35	55.03	71.10	
			4	14.53	75.29	75.88	41.31	38.64	83.32	13.53	75.29	77.54	41.50	35.99	83.32	
			5	21.20	87.85	97.09	51.48	24.12	88.15	19.75	87.85	97.29	50.91	22.46	88.15	
			6	2.91	90.35	100.00	52.61	2.91	90.35	2.71	90.35	100.00	51.98	2.71	90.35	
			Dust	0.28	41.42											
29	ROM	5	1	25.54	37.25	25.94	37.31	100.00	42.63							
			2	41.21	29.67	67.15	32.62	74.06	44.50							
			3	11.97	33.93	79.13	32.82	32.85	63.10							
			4	4.72	60.42	83.85	34.37	20.87	79.83							
			5	13.95	84.99	97.80	41.60	16.15	85.50							
			6	2.20	88.75	100.00	42.63	2.20	88.75							
			Dust	0.40	41.37											

James River Coal Company
Alma Mine 77 Coal

Test No.	Feed Condition	Feed Rate (tph)	Split	Product Stream Recovery – Incremental Yield (%)	Product Stream Recovery – Incremental Ash (%)	Product Stream Recovery – Cumulative Yield (%)	Product Stream Recovery – Cumulative Ash (%)	Reject Stream Recovery – Cumulative Yield (%)	Reject Stream Recovery – Cumulative Ash (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit – Incremental Yield (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit – Incremental Ash (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit – Cumulative to Product Yield (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit – Cumulative to Product Ash (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit – Cumulative to Reject Yield (%)	Based on Total Feed to Screening and Dry Coal Cleaning Unit – Cumulative to Reject Ash (%)	Remarks
21	screened	5	1	14.55	13.36	15.15	14.40	100.00	45.73	20.82	20.62	20.82	20.62	100.00	44.94	
			2	23.01	18.80	38.16	17.05	84.85	51.33	21.48	18.80	42.29	19.70	79.18	51.33	
			3	21.48	42.00	59.64	26.04	61.84	63.43	20.04	42.00	62.33	26.87	57.71	63.43	
			4	10.87	65.41	70.51	32.11	40.36	74.83	10.14	65.41	72.48	32.26	37.67	74.83	
			5	22.26	74.39	92.77	42.25	29.49	78.31	20.78	74.39	93.26	41.65	27.52	78.31	
			6	7.23	90.38	100.00	45.73	7.23	90.38	6.74	90.38	100.00	44.94	6.74	90.38	
			Dust	0.60	39.48											
22	screened	5	1	22.06	24.00	22.69	24.47	100.00	42.01	28.13	26.81	28.13	26.81	100.00	41.43	
			2	28.54	20.55	51.22	22.29	77.31	47.15	26.53	20.55	54.66	23.77	71.87	47.15	
			3	22.58	47.54	73.80	30.01	48.78	62.71	20.99	47.54	75.65	30.36	45.34	62.71	
			4	9.13	67.72	82.93	34.16	26.20	75.79	8.49	67.72	84.13	34.13	24.35	75.79	
			5	12.10	77.50	95.03	39.68	17.07	80.11	11.25	77.50	95.38	39.25	15.87	80.11	
			6	4.97	86.45	100.00	42.01	4.97	86.45	4.62	86.45	100.00	41.43	4.62	86.45	
			Dust	0.63	41.12											
23	screened	5	1	16.41	13.83	17.07	14.93	100.00	43.92	22.40	20.34	22.40	20.34	100.00	43.27	
			2	21.90	15.38	38.97	15.18	82.93	49.89	20.49	15.38	42.89	17.97	77.60	49.89	
			3	17.59	40.81	56.55	23.15	61.03	62.27	16.46	40.81	59.35	24.30	57.11	62.27	
			4	14.42	60.54	70.98	30.75	43.45	70.96	13.49	60.54	72.84	31.02	40.65	70.96	
			5	22.98	73.35	93.96	41.17	29.02	76.14	21.50	73.35	94.35	40.67	27.16	76.14	
			6	6.04	86.75	100.00	43.92	6.04	86.75	5.65	86.75	100.00	43.27	5.65	86.75	
			Dust	0.66	42.23											
24	screened	5	1	9.12	7.97	10.08	11.18	100.00	44.29	17.80	22.09	17.80	22.09	100.00	43.39	
			2	22.99	20.67	33.07	17.78	89.92	48.00	21.01	20.67	38.82	21.32	82.20	48.00	
			3	22.40	32.85	55.47	23.86	66.93	57.39	20.48	32.85	59.30	25.30	61.18	57.39	
			4	12.07	55.64	67.54	29.54	44.53	69.74	11.03	55.64	70.32	30.06	40.70	69.74	
			5	24.69	73.03	92.23	41.18	32.46	74.98	22.57	73.03	92.89	40.50	29.68	74.98	
			6	7.77	81.18	100.00	44.29	7.77	81.18	7.11	81.18	100.00	43.39	7.11	81.18	
			Dust	0.96	41.65											
25	screened	5	1	15.99	19.92	16.69	20.90	100.00	45.12	23.81	25.53	23.81	25.53	100.00	44.15	
			2	26.97	18.00	43.66	19.11	83.31	49.97	24.66	18.00	48.47	21.70	76.19	49.97	
			3	25.23	51.76	68.89	31.07	56.34	65.28	23.08	51.76	71.55	31.40	51.53	65.28	
			4	9.83	66.28	78.71	35.46	31.11	76.24	8.99	66.28	80.53	35.29	28.45	76.24	
			5	18.08	80.11	96.79	43.80	21.29	80.84	16.53	80.11	97.07	42.92	19.47	80.84	
			6	3.21	84.96	100.00	45.12	3.21	84.96	2.93	84.96	100.00	44.15	2.93	84.96	
			Dust	0.70	43.54											
26	ROM	5	1	23.31	29.74	24.12	30.12	100.00	48.33							
			2	24.77	24.06	48.89	27.05	75.88	54.12							
			3	16.67	51.28	65.56	33.21	51.11	68.68							
			4	13.75	72.95	79.31	40.10	34.44	77.10							
			5	18.17	79.30	97.48	47.41	20.69	79.86							
			6	2.52	83.90	100.00	48.33	2.52	83.90							
			Dust	0.82	40.99											